IMPROVING EDUCATIONAL THERAPISTS' KNOWLEDGE, EFFICACY, AND PRACTICES RELATED TO DEVELOPING STUDENTS' GROWTH MINDSETS

by
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Abstract

Self-efficacy and mindset are non-cognitive factors which may adversely or positively impact the reading achievement of students with learning disabilities (LD). According to researchers Dweck (2008) and Shim, Cho, and Cassady (2013), teachers' instructional practices can impact students' self-efficacy and mindsets. Examining the empirical intervention literature from a social cognitive framework provides a lens for understanding how self-efficacy and growth mindset beliefs may affect LD students' control over their learning. Nationally and in my context as the researcher, educators desire to know more about students' mindset beliefs and teacher instructional practices that may facilitate students' growth mindsets. To this end, I conducted a mixed-methods study to explore the effect of a revised educational therapist certification training to address the LD educators' need to become knowledgeable in the area of mindset beliefs and examine the corresponding educational impact on instructional practices and LD educators' self-efficacy beliefs for implementing growth mindset instructional practices. The 30 participants in the study provided reading interventions to private school elementary students with LD. The Mindset Knowledge Inventory, Teachers' Sense of Efficacy Scale, Reformed Teaching Observation Protocol, course artifacts, and interview transcripts were used to understand educational therapists' content knowledge of mindset information, efficacy beliefs, and instructional practices related to growth mindset. Statistically significant differences were found for content knowledge, efficacy beliefs, and instructional practices. Qualitative data also suggested that the revised educational therapist course positively affected educational therapists' self-efficacy beliefs and instructional practices related to growth mindsets.

Keywords: self-efficacy, mindsets, learning goals, professional development, reading, teacher knowledge, instructional practices, learning disabilities

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Dedication

This dissertation is dedicated to NILD educational therapists and students with learning disabilities.

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Executive Summary

Learning sciences research highlights the interaction between psychological beliefs, learning, and achievement (Immordino-Yang & Damasio, 2007). Two types of psychological beliefs sometimes referred to as non-cognitive beliefs (Dweck, Walton, & Cohen, 2011) that interact with learning and achievement are academic self-efficacy (Klassen, 2002) and mindsets (Dweck, 2000). Academic self-efficacy, defined as context-specific personal beliefs about one's ability to successfully learn to perform or perform tasks within a particular academic domain (Klassen, 202) can positively or negatively affect cognitive engagement, receptivity to using learning strategies, task motivation, and academic achievement (Baird, Scott, Dearing, & Hamill, 2009; Klassen 2002). Student's mindset, an individual's implicit beliefs about the malleability of intelligence, are another type of psychological belief that can also positively or negatively impact academic engagement, learning effort, and academic achievement (Dweck, 2000; Wigfield & Eccles, 2000). Students' academic self-efficacy and mindset beliefs are malleable and are shaped by interactions with adults and from their environment (Blackwell, Trzesniewski, & Dweck, 2007; Gunderson et al., 2013; Schunk & Ertmer, 2000).

Problem of Practice

The ability to read is a foundational skill required of all students for academic achievement (Cortiella & Horowitz, 2014) and a conduit for learning in the 21st-century (Podhajski, Mather, Nathan, & Sammons, 2009). However, for the 270,000 K-12 private school students with learning disabilities (LD; Kena et al., 2016), approximately 80% have difficulty learning to read (Shaywitz, 1998). According to the latest available data on private school students with LD, the National Assessment of Educational Progress (NAEP, 2015) indicates that 53% of fourth-grade students scored below basic proficiency in reading compared to 18% of

their peers without LD. The wide and persistent reading achievement gaps between private school students with LD and their peers without LD is a barrier for attaining current and future academic achievement and success beyond school (Cortiella & Horowitz, 2014).

Factors Affecting Reading Achievement

Special Educator Factors

The review of the literature on the factors affecting the low reading achievement of students with LD involved an examination of special educator and student factors. A key special educator factor identified as affecting the reading achievement of students with LD included the lack of use of research-informed reading instructional practices (Swanson, 2008). Despite the availability and delineation of research-informed reading instruction practices for students with LD, there has been minimal change in special educators' reading instruction over the past quarter of a century (Swanson & Vaughn, 2010). Impeding the dissemination of research-informed reading instructional practices was the limited funding for professional development in private schools (Bello 2006). Additionally, special educators indicated the belief that they were not obligated to utilize research-informed reading instructional practices as they were uniquely able to teach the needs of their students (Boardman, Arguelles, Vaughn, Hughes, & Klinger, 2005). Lastly, educators' mindset beliefs impacted instructional practices and the learning environment (Rattan, Good, & Dweck, 2011). Educators with a fixed mindset, the belief that intelligence is static, held low academic expectations for students with LD (Rattan et al., 2011) and were less likely to implement strategies to help struggling learners (Watanabe, 2006).

Student Non-Cognitive Beliefs

LD is a disorder in which a person with average to above average intelligence experiences difficulty with the basic cognitive processes needed to understand and use language

to think, speak, reading, spell, write, or do mathematics (IDEA, 2004). In addition to students' cognitive processes affecting reading achievement, the extant literature also indicated that non-cognitive factors contributed to the low reading achievement of students with LD (Baird et al., 2009; Paunesku et al., 2015). The non-cognitive factors of low academic self-efficacy and a fixed mindset negatively impacted the learning effort, learning goals, motivation (Grant & Dweck, 2003), and reading achievement of students with LD (Paunesku et al., 2015). Additionally, compared to their peers without LD, students with LD were more likely to have low academic self-efficacy beliefs and hold a fixed mindset (Baird et al., 2009).

Background and Context

Addressing the problem of the low reading achievement of private school elementary students with LD was situated in the interaction between the Learning Development Center (LDC; a pseudonym), a non-profit teacher training organization located in the Mid-Atlantic region, and private school special educators pursuing the LDC's certification training to become educational therapists (ETs). ETs provide one-on-one intervention to students with LD to strengthen core academic skills, such as reading (NILD, 2017). The LDC's educational therapist certification coursework includes training in understanding and conducting assessments and developing individualized intervention plans to strengthen the academic skills of students with LD. The LDC's educational therapist coursework does not include content or activities that address students' non-cognitive beliefs affecting the reading achievement of students with LD. At the time of this study, there are over 800 practicing ETs in the United States (NILD, 2017)

Theoretical Framework

The theoretical framework guiding the literature review and the research study was Bandura's (1986) social cognitive theory. Human agency, defined as individuals proactively

directing their behaviors and learning development, is a key construct in the social cognitive theory (Bandura, 1978). A factor influencing human agency is personal beliefs which afford individuals some control over their thoughts, feelings, and behaviors (Bandura, 1986). Triadic reciprocal determinism is the social cognitive theory's model of causation which Bandura (1986) described as a dynamic interaction between personal, behavioral, and environmental factors. Triadic reciprocal determinism provided a model for understanding how special educators' and students' personal beliefs such as mindsets and self-efficacy affect the learning environment, shape behaviors, and impact reading achievement (Baird et al., 2009; Paunesku et al., 2015).

Needs Assessment Reveals Educators' Interest in Non-Cognitive Factors

The role of students' psychological beliefs on academic achievement such as a growth mindset, the belief that you can improve your intellectual abilities (Dweck, 2000), and the role of teachers' instructional practices on developing students' growth mindset has gained attention from both researchers and educators over the past several decades (Farrington et al., 2012; Yettick et al., 2016). A national survey conducted by Education Week Research Center indicated educators were interested in learning about a growth mindset and how to develop a growth mindset in students (Yettick et al., 2016). Similarly, a needs assessment conducted with ETs ($N = 74$), indicated that they wanted to learn about a growth mindset and instructional practices that can facilitate students' growth mindset (Barbour, 2017).

Mindset Interventions

Empirical research examining the effect of interventions designed to develop students' growth mindset indicate that it is possible to change students' mindset from fixed to growth (Farrington et al., 2012). Changing students' mindsets from fixed to growth was associated with improved reading achievement (Paunesku et al., 2015). Researchers suggest that offering

professional learning opportunities that provide educators with content knowledge about students' growth mindset and trains educators to use growth mindset instructional practices such as process feedback that focuses on students' effort and use of strategies, can positively impact teachers' capacity to incorporate growth mindset instructional practices (Farrington et al., 2012).

Research Purpose and Objective

The needs assessment findings in combination with the literature review indicating the role of students' mindset in academic achievement (Farrington et al., 2012) suggested the need for creating a revised educational therapist certification (RETC) training to include mindset information. The purpose of this study was to investigate how participation in the RETC might impact ETs' content knowledge of student mindset information, self-efficacy beliefs to implement growth mindset instructional practices, and the use of growth mindset instructional practices while providing reading instruction to students with LD. The objective was to increase ETs' knowledge of mindset information and how to facilitate changing their students' fixed mindset to a growth mindset. Based on the dynamic interaction between personal beliefs, behavioral, and environmental influences impacting students' learning and achievement within a social cognitive theoretical framework (Bandura, 1986), and the growth mindset intervention research (Farrington et al., 2012), I hypothesize that the long-term impact associated with the RETC is that students with LD receiving reading instruction will demonstrate a growth mindset and improved reading achievement. However, because the student outcomes are distal outcomes, the current research study focused on ET outcomes.

This research involved four outcome and one process research question as follows:

Outcome Research Questions (RQ):

RQ 1: To what extent does participation in the RETC increase an ET's content knowledge of student mindset information?

RQ 2: To what extent does participation in the RETC increase an ET's self-efficacy for using instructional practices that focus on developing a growth mindset in students with LD?

RQ3: To what extent does participation in the RETC increase an ET's use of growth mindset instructional practices during reading instruction with students with LD?

RQ4: What components of the RETC do ETs identify as useful or not useful in facilitating self-efficacy beliefs to implement instructional practices that focus on developing a growth mindset in students with LD?

Process Research Question:

RQ 5: What observed variations in RETC implementation occur that affect the outcomes in ETs' self-efficacy for using instructional practices that focus on developing a growth mindset in students with LD?

Research Design

Guided by the research questions (Onwuegbuzie & Leech, 2006), the research design for the study was a quasi-experimental, one-group sequential explanatory mixed-methods design [QUAN(+qual)], or two-phase model (Creswell & Plano Clark, 2011). Pre and post-intervention quantitative and qualitative data were collected in the first phase with additional qualitative data collected in the second phase. Qualitative data from the second phase were combined with the qualitative data from the first phase to help explain the quantitative findings. The explanatory sequential mixed-methods designed facilitated a triangulation of the data to help explain post-intervention interviews (Creswell & Plano Clark, 2011).

Intervention

Private school elementary educators ($N = 30$) from 10 states who provided reading intervention to students with LD volunteered to participate in the RETC conducted in August 2018. I designed the RETC based on the extant literature indicating effective professional learning approaches have core features including content focus, active learning, and duration that can effect change in educator knowledge, self-efficacy beliefs, instructional practices, and student outcomes (Darling-Hammond, Hyler, & Gardner, 2017). The four types of RETC active learning activities associated with growth mindset content were embedded within an existing LDC educational therapist certification training course and occurred within a week-long face-to-face practicum. The RETC content focused on mindset theory and intervention research, as well as five growth mindset instructional practices. Twenty-one hours of the forty-six-hour practicum consisted of active learning related to developing a growth mindset in students with LD.

Data and Data Analysis

The quantitative data included pre- and post-intervention scores of the following: mindset knowledge, self-efficacy beliefs, and instructional practices. Quantitative data also included post-intervention only scores of the quantity and quality of the RETC. The statistical analyses included descriptive statistics, Wilcoxon Signed Rank Test, paired-sample *t*-tests, Pearson's r correlation, and ANOVA. Qualitative data were interview responses, open-ended survey response, and course artifacts (e.g., written reflections). For qualitative data, I used document analysis with inductive thematic coding and a priori coding (Strauss & Corbin, 1997).

Findings

Relating to the outcome research questions, statistically significant improvements were noted in each dependent variable: (a) content knowledge of mindset information, (b) self-

efficacy beliefs for the use of growth mindset instructional practices, and (c) use of growth mindset instructional practices during reading instruction. Additionally, very large treatment effect sizes were found across all three dependent variables. One correlation between content knowledge of mindset information and the student engagement self-efficacy subscale was found. No statistically significant correlations were found between content knowledge of mindset information and growth mindset instructional practices. Qualitative findings indicated that the ETs believed the active learning experiences facilitated their self-efficacy beliefs. The quantitative and qualitative findings for the process evaluation question indicated that the ETs engaged in the active learning activities as intended and perceived the RETC as beneficial in contributing to their confidence and motivation to implement their knowledge and instructional practices related to developing a growth mindset in students with LD.

This small, mixed-methods study provided an opportunity to create an intervention that gave ETs information about growth mindset and instructional practices that can facilitate students' growth mindset. While the small sample size and the lack of a comparison group impact the generalizability of the study's results to other ETs or special educators providing reading intervention to students with LD, there are implications for practice. The study offers support for the power of using active learning in future ETs' certification training courses. Additionally, the study's findings suggest that educational therapists' content knowledge, self-efficacy beliefs, and instructional practices related to a growth mindset are changeable.

Chapter 1

Introduction of the Problem of Practice

Learning disabilities (LD) is the largest disability category identified in K-12 public schools with 42% of students identified as LD (Kena et al., 2016). LD is also the largest disability category in private schools with estimates as high as 94% of students with disabilities categorized as students with LD (Taylor, 2005). The National Center for Education Statistics indicates that LD, as defined by the Individuals with Disabilities Education Act (IDEA, 2004), is a disorder in which individuals with average to above average intelligence experience difficulty with the basic cognitive processes required to understand and use language to think, speak, read, spell, write, or do mathematics. The manifestation of learning challenges associated with LD varies and has a significant impact on academic achievement (Cortiella & Horowitz, 2014).

Elementary students with LD are a heterogeneous group experiencing a variety of difficulties in learning and using academic skills (Lagae, 2008; Mammarella et al., 2016). While not all students with LD have difficulty with reading, reading disability is the most prevalent and well-recognized type of learning disability affecting 80% of those identified as learning disabled (Corteiella & Horowitz, 2014; Lagae, 2008; Shaywitz, 1998). In addition, elementary students with reading LD may experience adequate language comprehension; however, they may exhibit certain phonological deficits such as difficulties identifying and manipulating individual speech sounds and difficulties with accurately and fluently decoding words (Mammarella et al., 2016; Vellutino, Fletcher, Snowling, & Scanlon, 2004). Traditionally, learning to read occurs in grades pre-K-3 and transitions to reading to learn in Grade 4 and above (Duke, Bennett-Armistead, & Roberts, 2003). Therefore, upper elementary students with LD are at risk for being unable to navigate the reading to learn transition (Schulte, Stevens, Elliott, Tindal, & Nese, 2016).

Based on a decade of national student achievement trends, measured by the National Center for Education Statistics (NCES), wide and persistent reading achievement gaps exist between K-12 students with LD and their peers (Kena et al., 2016). According to the 2015 Reading Assessment in the National Assessment of Educational Progress (NAEP), 67% of fourth grade public schools students with LD and 53% of fourth grade private school students with LD received below basic reading scores compared to 31% and 18%, respectively of their peers without LD (NAEP, 2015). Furthermore, historical trends indicate that the reading achievement gap for students with LD does not narrow over time (Schulte et al., 2016). The low reading achievement of upper elementary school students with LD is problematic as reading difficulties present a barrier for attaining current and future academic achievement and success beyond school (Cortiella & Horowitz, 2014). Therefore, based on the historical trends of reading underachievement for students with LD (Kena et al., 2016) and the current NAEP (2015) data, there is a need for highly trained educators capable of providing effective academic intervention and support for private school students with LD.

The next section discusses the social cognitive theory as the theoretical perspective grounding the research, and will discuss the conceptual framework used to identify and examine factors associated with low reading achievement in upper elementary private school students with LD.

Theoretical Perspective and Conceptual Framework

The theoretical perspective used for this study was social cognitive theory (SCT) and triadic reciprocal determinism (TRD). The conceptual framework of the study included the role of intelligence beliefs and self-efficacy beliefs, two types of personal beliefs, examined through the lens of a social cognitive theoretical perspective. A conceptual framework (Figure 1)

identified the underlying variables examined in this literature synthesis that affected the reading achievement outcomes for students with LD. In the diagram, the solid arrow lines represent empirically established relationships between variables.

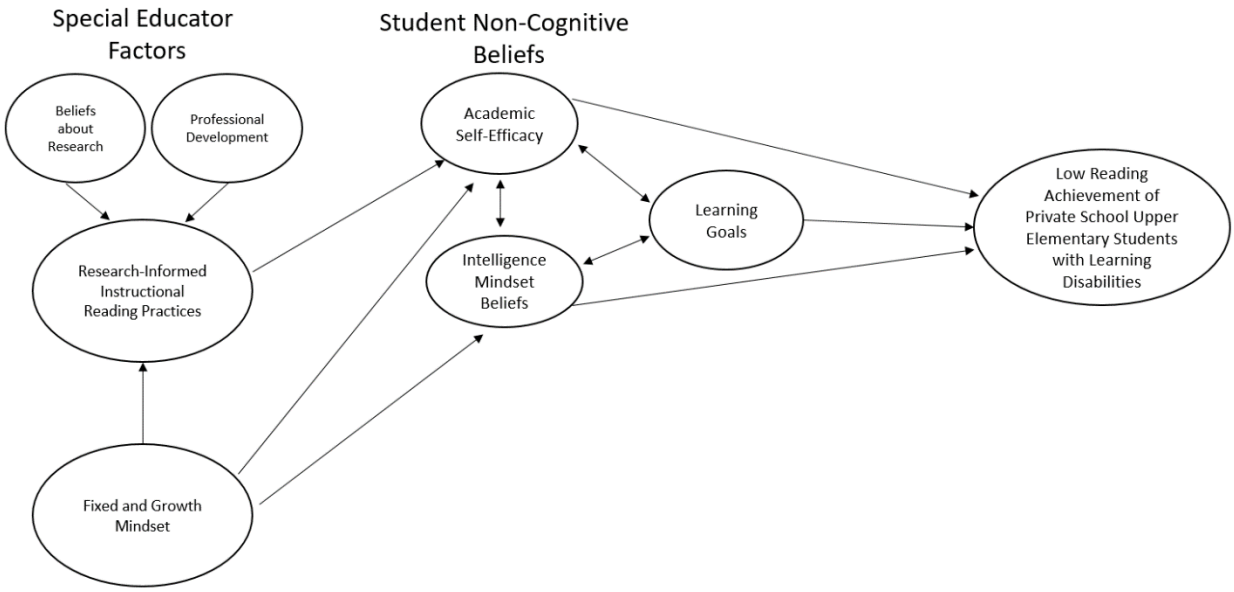

Figure 1. Conceptual Framework.

social cognitive theory and triadic reciprocal determinism. The social cognitive theory posits that individuals are proactively engaged in learning development and directing behaviors (Bandura, 1986). In one of Bandura's (1986) seminal publications, *Social Foundations of Thought and Action: A Social Cognitive Theory*, he described the human agency conceptual component of his social cognitive theory. In addition to other intrinsic factors such as cognition, Bandura's (1986) human agency concept posits that individuals possess personal beliefs that afford them some control over thoughts, feelings, and behaviors; and that "what people think, believe, and feel affects how they behave" (Bandura, 1986, p. 25). Personal beliefs influence the learning environment, shape behaviors, and affect achievement outcomes, which in

turn, inform and reinforce personal beliefs (Dweck, 2000; Dweck et al., 2011; Lynott & Woolfolk, 1994; Pajares, 1996).

Subsequently, regarding TRD, Bandura (1986) described TRD as a dynamic interaction between personal, behavioral, and environmental influences affecting individuals' learning and functioning. Therefore, TRD provided a conceptual framework for understanding how special educators' mindset beliefs not only affect instructional practices and how they viewed students' abilities, but also influenced students' mindset beliefs, shaped learning behaviors, and impacted reading achievement outcomes for students with LD.

Special Educator Factors

The empirical literature indicated that there are a variety of special educator factors which contribute to the low reading performance of students with LD. The following sections describe research-informed instructional reading practices and special educators' use of these practices with students with LD.

Research-Informed Instructional Reading Practices

Research conducted on effective components of instructional reading practices for use with students with LD indicated that effective reading instruction focused on three primary areas: (a) explicit and systematic reading instructional approaches, (b) building the foundational literacy skills of phonemic awareness and phonics, and (c) including the higher order processing skills of fluency, vocabulary, and reading comprehension from the start of reading instruction (National Reading Panel, 2000). Providing explicit and systematic reading instruction using small groups provides high-quality reading instruction to students with LD (Swanson, Hoskyn, & Lee, 1999). For example, utilizing explicit and systemic instruction in phonics and phonemic awareness directs the student toward developing an understanding of the sound-symbol

relationship where the sounds heard in words are linked to the graphemes, the letters that represent the sound (Moats, 2000). Effective instructional reading practices focusing on higher order processing skills such as reading fluency and vocabulary focus on oral reading practice, repeated reading, practice reading connected text, and vocabulary development through consistent reading (Swanson, 2008). Direct instruction in metacognitive reading comprehension strategies such as self-regulation and comprehension instruction in making predictions and connections are other effective instructional reading practices to use with students with LD (Klinger, Urbach, Golos, Brownell, & Menon, 2010).

special educators' use of research-informed instructional reading practices.

Educational therapists, working as special educators in private schools, provide individualized reading instruction designed to facilitate the development of reading skills in students with LD (NILD, 2016). One unpublished doctoral thesis (Keafer, 2008), indicated that literacy training components of LDC's educational therapist certification program reflected the three primary areas the National Reading Panel (NRP) (2000) indicated were effective literacy instructional practices. These three areas are: (a) explicit and systematic reading instructional approaches, (b) building the foundational literacy skills of phonemic awareness and phonics, and (c) including the higher order processing skills of fluency, vocabulary, and reading comprehension from the start of reading instruction. However, as of the date of this research, no published empirical literature was found that examines educational therapists' use of research-informed reading instructional practices for students with LD.

Although the reading instructional practices of educational therapists working in private schools with students with LD is yet to be studied, research studies conducted between 1980 and 2005 provide insights into the reading instruction practices of public school special educators

working with students with LD. Even though this twenty-five year period was noteworthy for the convergence of empirical literature reflecting a consensus for effective reading instruction practices for students with LD, research conducted during this time reflected minimal use of research-informed instructional reading practices (Swanson & Hoskyn, 1998; Snow, Burns, & Griffin, 1998). According to Swanson's (2008) meta-synthesis of 21 classroom observational research studies conducted between 1980 and 2005, special educators tended to use low quality reading instruction practices with students with LD that reflected minimal explicit instruction in phonics and reading comprehension strategies, two components of research-informed instructional practices.

Despite the availability and delineation of research-informed effective reading instruction practices for students with LD, there has been little change in special educators' reading instruction over the past quarter of a century (Klinger, Urbach, Golos, Brownell, & Menon, 2010; Moody, Vaughn, Hughes, & Fischer, 2000; Swanson & Vaughn, 2010). Based on their mixed-methods study, researchers Swanson and Vaughn (2010) identified the persistence of lack of changes in instructional reading practices when their study's outcomes replicated a previously published work (Moody et al., 2000). Additionally, both studies examined the components of reading instruction that elementary special education teachers implemented in public school resource rooms and the corresponding reading achievement outcomes of students with LD over time.

In Swanson and Vaughn's (2010) study, ten resource room special educators from four Southwestern school districts and thirty 2nd through fifth-grade public school students identified as special needs students participated in the study, with 56% identified as students with LD. Observational data collected included multidimensional reading instruction descriptions, time

allocated to reading components, and teaching quality. Repeated administrations of the Woodcock-Johnson III Tests of Achievement [WJ III ACH] (Woodcock, McGrew, & Mather, 2001a) and the Dynamic Indicators of Basic Early Literacy Skills Oral Reading Fluency (DIBELS ORF: Good & Kaminski, 2002) provided data on students' reading abilities. Swanson and Vaughn's (2010) primary findings indicated special educators taught phonological awareness less than 2% of the total observed time. In the data collection, observers coded 40% of the teachers as low average, or weak in instructional quality. The educators did not link phonological awareness activities to word reading skills such as, linking phonemes to graphemes. Special educators' use of comprehension instruction encompassed 25% of the total observed reading instruction, and specific reading comprehension strategy instruction occurred less than 7% of the total observed reading instruction time. Students' pre-and posttest reading scores for single word decoding and passage comprehension improved, but were not statistically significant. The remaining reading scores were below the normative mean indicating the improvement was not at a rate that facilitated closing the reading achievement gap between students with LD and without LD.

Overall, Swanson and Vaughn's (2010) findings reflected similar outcomes to Moody and colleagues' (2000) results a decade earlier. First, both studies' outcomes demonstrated the continued lack of use of research-informed instructional reading practices with students with LD. Secondly, the outcomes of both studies revealed that the infrequent and ineffective use of research-informed instructional reading practices used with elementary public school students within LD in resource rooms correlated with inadequate reading achievement gains.

Both Swanson and Vaughn's (2010) and Moody and colleagues' (2000) studies were nonexperimental, so it is not possible to determine which type and amount of reading instruction

correlated with the changes in academic achievement. However, the studies' findings did establish an association between instructional reading components taught and academic achievement. Although the small sample sizes and the participants' geographical homogeneity limited the generalizability of Swanson and Vaughn's (2010) and Moody et al.'s (2000) studies, the conclusions appeared to be valid, and well-supported by the evidence. Additionally, the studies' outcomes aligned with the findings from Swanson's (2008) meta-synthesis of 21 observation studies investigating reading instruction for students with LD.

As of the date of this research, there is relatively little empirical literature on private school special educators' instructional reading practices for students with LD (Swanson, 2008). However, two related studies on instructional practices provided comparative insight between public and private schools. O'Brien and Pianta's (2010) qualitative study examined the differences between public and private schools based on first and third-grade classroom processes. The data analyzed for this study came from the 1991 National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development (SECCYD), a longitudinal study following children from birth to adolescence. This study identified 840 first-grade classroom data (686 public and 154 private) and 848 third-grade classroom data (704 public and 144 private). Teacher questionnaires provided qualitative information on seven different classroom variables including mathematics and language arts instruction, class size, teacher experience, group activities, and educator emotional quality of the classroom and instructional quality. The results of the study indicated public schools had higher instructional quality relative to literacy instruction and evaluative feedback and more language arts instructional time compared to private schools. However, the overall findings of the study

indicated no significant differences between classroom processes and characteristics between public and private schools.

Other research examining the differences between public and private schools processes focused on comparing differences in instructional practices. Eigenbrood's (2005) mixed-methods study examined the provision of special education services and instructional activities of resource room special education teachers working in 18 faith-based private rural schools compared to 24 geographically matched public schools in a Midwestern state. The study's results indicated five percent of the public school special educators and none of the faith-based special educators reported using systematic literacy instruction in the resource room. Empirical support for the lack of use of research-informed reading instruction practices with students with LD and the similarities between public and private school classroom process illuminated underlying factors related to the reading achievement gap for students with LD, which historically and currently persists in both public and private schools (NAEP, 2015; Schulte et al., 2016). However, research studies examining reading instructional practices used with students with LD do not shed light on why special educators do not use research-informed instructional reading practices.

professional development and beliefs about research. A research to practice gap existed between the types of instructional reading practices used with students with LD and an implementation of research-informed reading instructional practices involving LD students. Hence, researchers can raise the question as to why these practices are not a part of the instructional methodology used by public school special education teachers or private school special educators. Researchers interested in knowledge mobilization examine research to practice barriers and ways to facilitate stronger connections between research, policy, and

practices (Levin, 2011). According to Bello (2006) and Taylor (2005), there is limited research on the use of special education instructional practices in private schools. However, both Bello (2006) and Taylor (2005) found similar factors contributing to private school special educators' limited use of research-informed reading practices: (a) limited funding and personnel resources for professional development and (b) limited faculty knowledge regarding research-informed practices. Additionally, researchers in the field of knowledge mobilization posited that knowledge about formal research stemming from professional development is not the most prevalent knowledge affecting instructional practices in education (Klinger, 2004). Instead, conventional wisdom, experience, and personal beliefs exert greater influence in shaping special educators' instructional practices (Coburn & Talbert, 2006; Levin, 2011).

In another qualitative study, theorists Boardman and colleagues (2005) used focus groups to provide insight into public elementary school special educators' perceptions ($N = 49$) concerning the use of research-informed reading instructional practices for LD students. The focus groups also examined views about professional development programs designed to improve special educators' implementation of research-informed reading instructional practices. The study's findings suggested that special education teachers did not believe they were obligated to use research-informed reading instructional practices in their classrooms. Additionally, participants indicated that they were uniquely able to teach to the individual needs of their students. The participants believed that research-informed instruction was unable to meet their students' individual needs. Therefore, pairing research-informed instructional methods with high-quality professional development did not mitigate the low likelihood of research-informed instructional practices being adopted by special educators (Boardman et al., 2005).

Although a focus group approach provided insight into issues and themes related to special educators' beliefs about research-informed instructional practices where minimal previous research existed, the study's small sample size potentially limited the generalizability of the findings. Subsequently, special educator beliefs about the applicability of research-informed instructional practices are one type of educator beliefs associated with the low reading achievement of students with LD.

The next section includes an examination of the literature related to educators' personal beliefs about intelligence, another factor associated with the low reading achievement of students with LD.

Fixed and Growth Mindsets

Special educators' beliefs about intelligence can have an impact on their instructional behaviors and the learning environment. Researchers consider beliefs about intelligence to be an individual's implicit theory of intelligence (Dweck, 2006; Sternberg, 2000). According to Dweck (2006), implicit theories of intelligence are defined as an individual's beliefs about the nature of intelligence and the stability of ability such as, whether intelligence is fixed or malleable. The two opposing views of intelligence are either an incremental view, the belief that individuals have some degree of control over their intelligence; or the entity view, which is the belief that individuals are born with a fixed level of intelligence that is predetermined by genetics (Dweck, 2000; Dweck & Leggett, 1988; Gutshall, 2014; Jones, Bryant, Snyder, & Malone, 2012; Sternberg, 2000). The terms entity and incremental beliefs evolved over the past twenty-five years so that, "the original terms of entity and incremental have morphed into the routinely accepted terms of fixed and growth mindsets" (Gutshall, 2013, p. 1073). Recent research has examined how special educators' mindset beliefs applied to students with LD, as well as the

impact of teacher mindsets on instructional approaches, and the effect of student mindset beliefs on achievement outcomes (Gutshall, 2013; Rattan et al., 2011; Shim, Cho, & Cassady, 2013).

There are two entirely different self-theories, or mindsets, that people use to understand intelligence (Dweck, 2000). According to Dweck and Leggett (1988), a growth mindset is the belief that with effort and guidance individuals can improve their intellectual abilities. Educators with growth mindsets believe students can develop their intellectual ability by expending effort, learning new skills, and acquiring knowledge (Shim et al., 2013). A fixed mindset is the belief that intelligence is a static trait (Dweck, 2000). Educators with fixed mindsets believe they are unable to cultivate their students' intelligence through learning and therefore hold low academic expectations for students with LD (Rattan et al., 2011). Theorists Leroy, Bressoux, Sarrazin, and Trouilloud's (2007) research with 336 French fifth-grade educators examined self-efficacy and their beliefs about intelligence mindsets. The outcomes suggested that educators with growth mindsets had higher teaching self-efficacy. According to Pajares (1996), self-efficacy can be defined as beliefs individuals hold regarding their individual ability to perform tasks in specific situations (Pajares, 1996). Conversely, the educators with fixed mindsets reported lower levels of teaching self-efficacy. In Leroy et al.'s (2007) study, high teacher self-efficacy correlated with increased teacher effectiveness and promoting students' intrinsic motivation for learning.

In comparing educators with growth mindsets to educators with fixed mindsets, educators with fixed mindsets believed that students' achievements remained mostly constant throughout the year, and as a teacher, they had no influence on a students' intellectual ability (Dweck, 2006; Watanabe, 2006). Educators holding fixed mindsets also viewed student failures or difficulties as indicators of lack of ability, rather than, using the mistakes as an informative learning experience to develop skills (Deemer, 2004; Shim et al., 2013).

Furthermore, educators believing in a fixed mindset (e.g., ability is not malleable) are less likely to implement strategies to help struggling learners (Watanabe, 2006). Rather than teaching students with LD learn how to learn and use metacognitive strategies such as self-regulation and self-evaluation, instructional strategies for students with LD focus on mastery of basic skills (Woodcock & Vialle, 2010). The combination of students' poor academic performance and educators' lack of instructional response to develop the skills as a function of fixed mindsets, negatively influences students' self-efficacy toward learning, the beliefs individuals hold regarding their ability to perform tasks in specific situations successfully (Hampton & Mason, 2003). Not only do educators' mindsets influence their beliefs about their students' abilities but Pretzlik, Olsson, Nabuco, and Cruz's (2003) study conducted with fifth and sixth-grade teachers in London and Kindergarten teachers in Portugal, suggested that teachers' views about their students' intelligence influenced students' intelligence perspectives.

Theorists Dweck and Leggett's (1988) research indicated that students who were led to believe that their intelligence was fixed based on their interactions with their teachers reported anxiety about whether they had sufficient intelligence to accomplish the task. Subsequently, students' anxiety related to their fixed mindset beliefs correlated in foregoing learning opportunities in the pursuit of easy, low-effort tasks that ensured successes. The impact of teachers' mindsets on instructional practices and students' personal beliefs about their intelligence and subsequent learning behaviors in response to these beliefs primarily focused on regular educators and students with LD. While there is little research on the effect of special educators' mindsets specifically impacting students with LD, the next section discusses the available research findings to date.

teacher mindsets and their impact on students with LD. There are few studies examining teachers' mindsets that apply to students with LD; however, those that exist tend to support the claim that teachers apply their personal mindset beliefs to their students with LD. One researcher, Gutshall (2013) examined 238 Pre-K-12th-grade public school teachers' mindset beliefs and applied them to their beliefs about students' intelligence as a function of gender and learning disability status. The participants in Gutshall's (2013) study had an average of 14 years of teaching experience. Thirteen percent of the study's population were elementary special education teachers, 74% were regular educators teaching middle and high school, and the remaining 13% did not identify whether they were regular or special educators.

The researcher, Gutshall (2013), used two, short (3-question) surveys based on Dweck and Henderson's (1989) mindset survey. All participants completed the first survey about implicit intelligence beliefs. The second survey examined how teachers' mindsets applied to students in classrooms using four different student scenarios (male no LD/LD and female no LD/LD). The findings from Gutshall's (2013) study indicated that 69.8% of the teachers reported growth mindsets and 26.1% reported fixed mindsets. Furthermore, teachers' mindsets compared with teachers' mindsets for hypothetical students were highly correlated ($r = .47$, $p < .01$, 2-tailed) and were not influenced by student gender or learning disability status. Additionally, from the study, teacher mindset was not impacted by demographic teacher variables such as gender, years teaching, regular or special educator, or grade taught.

Identifying educators' mindsets is important to educational practices. Research indicates that the two mindsets, growth and fixed, correlate with different pedagogical practices (Deemer, 2004; Dweck, 2006; Rattan et al., 2012; Shim et al., 2013). Based on the concept of TRD, teacher beliefs can influence the learning environment through verbal feedback and through

dynamically interacting with learners' beliefs and behaviors, which are hypothesized to impact students' learning outcomes (Bandura, 1989; Gutshall, 2014). Given Gutshall's findings then, we might expect that teacher mindset related to students with LD would lead to observable differences in instructional reading practices.

the effect of teachers' mindsets on instructional practices. Teachers' beliefs about children's intelligence shape the learning environment, influence the choice of instructional practices including instructional goals and the type of feedback provided to students (Deemer, 2004; Dweck & Bempechat, 1983; Jones, Bryant, Synder, & Malone, 2012; Lynott & Woolfolk, 1994; Shim et al., 2013; Swann & Snyder, 1980) and reciprocally influence beliefs and learning behaviors of students' with LD (Bandura, 1986). Researchers Swann and Snyder (1980) conducted a study with 90 undergraduate students that involved teaching three different problem-solving strategies within the context of a card trick. Two of the problem-solving strategies required minimal direct instruction and the third strategy required direct instruction in the use of a metacognitive problem-solution approach. The researchers randomly assigned 30 participants to the role of a teacher and 60 participants to the role of a student. Furthermore, an experimenter participating in the study provided information to the teacher participants that encouraged them to develop a theory about the nature of intelligence. Fifteen teacher participants were led to develop an incremental theory of intelligence, the belief that intelligence is malleable. The remaining 15 teacher participants were led to develop an entity theory of intelligence, the belief that intelligence is fixed. Additionally, the 60 student participants were randomly assigned a label as either high-ability or low-ability student. Each teacher participant taught two students and knew if the student was a high- or low-ability student. Based on analysis of variance, there was an interaction between theory of intelligence and student ability label. Teachers used the

direct instruction approach to develop their students' metacognitive approach to solving the card trick most often to teach students labeled as having high-ability. Furthermore, teachers' theory of intelligence correlated (r = .59) with the type of teaching strategy used. Overall, the outcomes from Swann and Snyder's (1980) study indicated teachers led to believe that intelligence was malleable (growth mindset) utilized more direct instruction in their teaching and set an instructional goal to help students develop problem-solving skills with students labeled high-ability. In comparison, teachers led to believe that intelligence was a fixed trait provided students more autonomy in problem-solving and set an instructional goal requiring that the students independently develop solutions to the problems presented.

In addition to the mindset research outcomes, because students with LD required direct and explicit instruction on how to develop self-regulated and self-directed reading strategies, the reduced instructional support also presented a problem for acquiring reading skills. The reduced instructional reading support for students with LD was an underlying factor related to the reading achievement gaps as students have difficulty analyzing the reading task requirements, selecting and implementing appropriate decoding strategies, and monitoring and adjusting performance (Klassen, 2002; Swanson, 1989).

Other researchers interested in the impact of mindsets on instructional practices examined the type of feedback provided to students based on teachers' mindset beliefs (Dweck, 2000; Good, Rattan, & Dweck, 2007; Rattan et al., 2012). Rattan et al.'s (2012) explored the potential impacts of mindsets on instructional feedback practices. Ninety-five undergraduate students from a public college on the East Coast were placed in a teacher role and provided scenarios depicting seventh-grade students with low mathematics ability. Teacher participants with fixed mindsets provided more comfort-oriented feedback such as "It's just not the case that everyone is

a “math person” (Rattan et al., 2012, p. 735). This type of feedback comforted the students for their poor performance and lack of ability rather than providing strategies to develop mathematical abilities. Additionally, participants used teaching strategies such as assigning less mathematics homework and lowering their achievement expectations that “could reduce engagement and future achievement in the subject” (Rattan et al., 2012, p. 733). Educators’ fixed mindsets influenced the way they perceived students’ difficulties and the types of feedback provided to students (Rattan et al., 2012) which in turn can negatively affect students’ self-efficacy, the beliefs individuals hold regarding their ability to perform tasks in specific situations successfully (Hampton & Mason, 2003).

In contrast, other research indicated less empirical evidence for the widely held conceptual relationship between teachers’ mindsets and the impact on instructional practices (Shim et al., 2013). The research conducted by Shim et al. (2013) with 209 Pre-K-12th-grade educators from the Midwest region of the United States, investigated how teachers’ mindsets correlated with classroom learning goal structures, which are the type of achievement goals educators foster in the classroom. Findings from the study suggested teachers’ implicit views about their students’ intelligence did not have a direct effect on mastery learning goals which focus on developing academic competence and only a small effect $p < .05$ on performance learning goals which focus on demonstrating academic competence. The outcomes from Shim and colleagues’ (2013) study and the lack of research focused on the effect of special educators’ mindsets on the type of instructional goals used with students with LD within the academic domain of language arts indicated the need for additional examination. A potential area to explore is the relationship between these constructs and the reading achievement of students with LD. Furthermore, because student beliefs have been hypothesized to contribute to the prediction

of academic outcomes beyond teachers' use of instructional practices, and student ability and knowledge (Dweck et al., 2011; Klassen, 2002; Pajares, 2002), an examination of student non-cognitive factors using triadic reciprocal determinism follows.

Student Non-Cognitive Beliefs

From a social cognitive theoretical perspective, student learning is a product of triadic reciprocal determinism (TRD; Bandura, 1986). Bandura (1989) posited that while environmental, personal, and behavioral factors involve bidirectional influences, their reciprocal influence is not simultaneous. Therefore, "it is possible to gain some understanding of how different segments of two-way causation operate without having to mount a herculean effort to study every possible interaction at the same time" (Bandura, 1986, p. 25). Researchers selecting the interactive process between thought and action as their sector of interest investigate how personal beliefs shape and guide behavior (Bandura, 1986). How individuals interpret and evaluate the results of their behavior shape their environments and personal beliefs, which, in turn, inform and change subsequent behavior (Bandura, 1978). Students with LD can have intrinsic non-cognitive factors such as fixed mindsets and low academic self-efficacy beliefs which interact with educator factors to reciprocally impact student learning behaviors and academic achievement outcomes (Baird et al., 2009; Dweck, et al., 2011; Klassen, 2002; Pajares, 1996).

Intelligence Mindset Beliefs

Numerous research studies examined Pre-K-12th-grade students' mindset beliefs and how mindset beliefs interacted with learning behaviors. Findings from the studies revealed that students with growth mindsets adopted mastery learning goals and had higher academic achievement than those possessing fixed mindsets (Blackwell et al., 2007; Dweck, 2000; Dweck

& Leggett, 1988; Dweck, 2000; Good, Aronson, & Inzlicht, 2003; Hong, Chiu, Dweck, Lin, Wan, 1999; Mangels, Butterfield, Lamb, Good, & Dweck, 2006; Robins & Pals, 2002). Conversely, students with fixed mindsets who did not expect their learning efforts to yield significant improvements, expressed lower academic self-efficacy, and adopted performance learning goals which influenced their choice of tasks, effort, persistence, and academic achievement (Baird et al., 2009; Curry, Elliott, Da Fonseca, & Moller, 2006; Elliott & Dweck, 1988; Dweck & Henderson, 1989).

According to Boaler (2013) research conducted on students' mindsets indicate that approximately 40% of U.S. students display a growth mindset, 40% display a fixed mindset, and approximately 20% of students show mixed profiles. However, as of this research study, few empirical studies have investigated the types of mindsets held by students with LD compared to their non-LD peers. Baird and colleagues' (2009) and Valås' (2001) studies examining mindset beliefs of students with LD indicated a stronger likelihood that students with LD held fixed mindsets compared to their peers without LD. For example, Baird and colleagues' (2009) study of 6th-12th-grade students (N = 1,518; 107 LD and 1,411 non-LD) from two rural public school districts in the United States indicated students with LD were more likely to exhibit fixed mindsets compared to their non-LD peers. Furthermore, fixed mindset beliefs correlated with performance goals, and students with LD reported that academic effort was an indicator of limited ability. Applying the knowledge gained from numerous empirical studies investigating the mindset beliefs of students without LD facilitated comparative insights into how fixed mindsets similarly affected students with LD and the resulting impact on academic behaviors and achievement.

students' mindset beliefs, learning goals, and achievement outcomes. Researchers hypothesized that differences in student mindset beliefs generated differences in behavior so that academic achievement was not only influenced by ability, but also by the beliefs about intelligence which influenced the type of learning goals students used (Cury et al., 2006; Dweck & Henderson, 1989; Dweck & Leggett, 1988; Mangels, et al., 996; Pretzlik et al., 2003). The two primary types of learning goals correlated with mindset beliefs were performance and mastery learning goals (Elliott & Dweck, 1988). Performance learning goals focus on demonstrating competency and avoiding learning opportunities where there exists a high risk of error. In contrast, mastery learning goals focus on developing intelligence and learning (Dweck & Leggett 1988).

Researchers interested in investigating the relationship between students' mindset and learning goals on academic performance examined whether changing students' mindsets resulted in improvements in academic performance (Blackwell et al., 2007). Blackwell et al.'s (2007) two-year longitudinal study examined the impact of students' mindsets on the types of learning goals used and math achievement outcomes with four successive cohorts of seventh- and eighth-grade students without LD ($N = 373$) in a New York City public school. The participants who were randomly assigned to the experimental treatment group participated in eight weekly advisory sessions each lasting 25 minutes. During the sessions, participants learned that intelligence is malleable and that the brain is similar to a muscle which grows with use. Participants in the control group received math study skills training during the advisory sessions.

The findings of Blackwell et al.'s (2007) study indicated the experimental group showed significantly greater change in growth mindset than the control group ($F = 3.98$, $p < .05$), and demonstrated stronger growth mindsets than the control group after the intervention ($d = .47$, $F =$

4.50, $p < .05$). Additionally, students with growth mindsets utilized mastery learning goals and perceived academic challenges as indicators to increase their effort or implement new strategies. As hypothesized, students with growth mindsets outperformed students with fixed mindsets in mathematics achievement two years later, and growth mindsets were also found to be a predictor of higher mathematics grades earned at the completion of the second year of junior high school. Students with fixed mindsets utilized performance learning goals and sought to avoid challenging academic tasks that might reveal a lack of skills. Furthermore, students with fixed mindsets believed that increased effort indicated low ability rather than being an indicator to implement new strategies (Blackwell et al., 2007). Overall, the type of mindset students held manifested differences in students' learning goals and mathematics achievement outcomes. Because students' academic self-efficacy is another personal belief impacting achievement outcomes (Bandura, 1986; Pajares, 2002), a discussion of its role in student learning behaviors and achievement outcomes follows.

Academic Self-Efficacy

Self-efficacy, defined as a person's judgment and beliefs about their capability to perform the actions required to achieve different types of performance, is another human agency conceptual component of social cognitive theory (Bandura, 1997). Academic self-efficacy consists of context-specific personal beliefs about one's ability to successfully complete a task within a particular academic domain (Klassen, 2002; Pajares, 1996). Researchers examining self-efficacy use different theoretical frameworks to understand how self-efficacy affects student performance such as, motivation or attribution theories of achievement which focus on self-concept, confidence, effort, and expectancy for success (Bandura, 1997; Blackwell et al., 2007; Pajares, 1996). Within the social cognitive theory, self-efficacy perceptions operate within a

larger self-system, in which they interact with mindset beliefs and knowledge structures. “Knowledge structures representing the rules and strategies of effective action serve as cognitive guides for the construction of complex modes of behavior” (Bandura, 1997 p. 34). In essence, researchers applying the social cognitive framework of learning and development examine the role of self-efficacy beliefs as a mechanism underlying behavioral actions (Pajares, 1996; Schunk, 1991).

According to Bandura, "Among the mechanisms of personal agency, none is more central or pervasive than people's beliefs about their capabilities to exercise control over events that affect their lives" (1989, p. 1175). Individuals engage in self-reflection to evaluate their thinking and behavior, and some of these self-evaluations include perceptions of self-efficacy (Pajares, 1996). Self-efficacy beliefs form as a result of past accomplishments, observations of others, social or verbal persuasion, and interpreting physiological states (Baird et al., 2009). An examination of the factors affecting the self-efficacy beliefs of students with LD is important because they have been less heavily studied in students with LD in the reading domain and have been hypothesized to contribute to the prediction of academic outcomes beyond ability, prior accomplishments, knowledge, and skill alone (Dweck, et al., 2011; Klassen, 2002; Pajares, 2002).

student academic self-efficacy, learning goals and achievement outcomes.

Examination of the interaction between students’ beliefs and actions within the TRD construct allows researchers to investigate the role of academic self-efficacy beliefs in shaping the learning behaviors of students with LD. Bandura (1986) hypothesized optimistic estimates of academic self-efficacy increased effort and persistence to promote achievement. To test this hypothesis, researchers examined academic self-efficacy in a variety of academic domains and ages of

students and found self-efficacy correlated with task approaches, perseverance, effort level, and academic achievement (Hampton & Mason, 2003; Klassen, 2006; Schunk, 1991; Zimmerman, Bandura & Martinez-Pons, 1992). Thus, there is empirical support indicating that students with LD exhibit lower self-efficacy beliefs compared to their peers without LD (Baird et al., 2009; Baum & Owen, 1988; Hampton & Mason, 2003; Klassen, 2002).

Authors, Baum and Owen (1988) examined six types of cognitive and motivational variables to determine the differences between high ability students and students with LD. General academic self-efficacy was one variable examined in the 112 fourth through sixth-grade students (34 with LD/average ability; 24 with LD/high ability; and 54 non-LD/high ability) enrolled in six different public urban and suburban Connecticut school districts. The Self-Efficacy for Academic Tasks (Owen & Baum, 1985) measured students' academic self-efficacy. School placement in gifted, general, or remedial classes and students' grades indicated student achievement ability. Researchers used students' intelligence scores as measured by the Wechsler Intelligence Scale for Children-Revised [WISC-R] (Wechsler, 1991) as indicators of students' intellectual ability. Descriptive statistical analysis indicated the three groups were distinguishable. The group means and standard deviation differences indicated both LD groups exhibited lower levels of self-efficacy compared to their high ability peers. Furthermore, low levels of academic success and a heightened sense of inefficiency in school correlated with the low self-efficacy of the LD/high ability group (Baum & Owen, 1988).

Other empirical literature indicated students with LD might miscalibrate self-efficacy, either overestimating or underestimating their ability to perform a task resulting from faulty task analysis, lack of self-knowledge, or the tendency for self-protection (Klassen, 2002; Klassen, 2006; Meltzer, Roditi, Houser, & Pearlman, 1998). Klassen (2002) suggested two interpretations

of the definition of overestimation of efficacy beliefs, either average task performance coupled with overly optimistic self-efficacy beliefs, or average self-efficacy beliefs coupled with low task performance. Klassen's 2006 study examined the spelling and writing self-efficacy beliefs of eighth- and ninth-grade students ($N = 133$; 68 with LD and 65 non-LD matched for gender and age) attending two public and one private school in Western Canada. Participants rated themselves on domain-specific and general self-efficacy measures and completed pre- and post-estimates of spelling and written expression performance. The Woodcock-Johnson III Tests of Achievement [WJ III ACH] (Woodcock, McGrew, & Mather, 2001a) provided a comprehensive measure of writing achievement. The results of Klassen's (2006) study indicated the non-LD group scored higher in self-efficacy compared to the LD group and accurately predicted spelling and writing performance before and after the writing tasks. However, the LD group overestimated their abilities on both domains including overestimating predictions of ability following task completion.

Other researchers provided additional empirical support that students with LD may miscalibrate academic self-efficacy beliefs (Pintrich, Anderman, & Klobucar, 1994). Pintrich et al. (1994) compared the reading comprehension self-efficacy beliefs between fifth-grade students with LD and their peers without LD ($N = 39$; 19 LD and 20 non-LD students). Although Pintrich et al.'s (1994) findings indicated the average reading self-efficacy beliefs of students with LD was similar to their non-LD peers, the LD group's performance did not match their self-efficacy perception as they scored significantly lower on the reading comprehension tasks than their non-LD peers. For students with LD in Pintrich et al.'s (1994) study, the combination of low self-efficacy and overestimation of ability negatively influenced learning behaviors, specifically task completion. Pintrich et al.'s (1994) research indicated that the effects of miscalibrated self-

efficacy resulted in students with LD either lacking persistence during effortful tasks or reduced effort based on the inaccurate awareness of self-capabilities for domain specific tasks.

Understanding the bidirectional interaction between self-efficacy and learning behaviors and its subsequent impact on achievement outcomes using the TRD conceptual framework sheds light on how these factors contribute to the low reading achievement outcomes for students with LD. However, examining only the student bidirectional interactions without considering the educators' influence in the interactions between self-efficacy, learning behaviors, and achievement outcomes is incomplete. To provide a more holistic examination, the effect of bidirectional interactions between teachers and students and the effect on self-efficacy and achievement outcomes is explored further.

Examination of the interaction between educational factors and students' beliefs within the framework of TRD allows researchers to investigate the role of educators' influence on the academic self-efficacy beliefs of students with LD. Social persuasion including verbal feedback and past accomplishments are two of the primary sources by which students develop self-efficacy (Baird et al., 2009; Hampton & Mason, 2003). Special educators' minimal use of research-informed instructional reading practices correlated with the low reading achievement of students with LD and thus reduced a key source of self-efficacy, accumulation of past performances (Moody et al., 2000; Swanson & Vaughn, 2010).

Furthermore, educators' fixed mindset beliefs applied to their students with LD correlated with low expectations for achievement and verbal feedback that reinforced a lack of ability (Rattan et al., 2012). As students with LD experienced lower reading achievement, their self-efficacy decreased which in turn affected their learning behavior including decreased use of effective strategies, decreased accuracy of performance, choice of tasks based on performance

learning goals, motivation, effort, and persistence (Elliott & Dweck, 1988; Pajares, 1996; Klassen, 2002).

Conclusions and Next Steps

The social cognitive theoretical perspective of learning and development highlighted the importance of human agency in the learning process. Specifically, educator and student beliefs manifested in the concepts of mindset and self-efficacy. The construct of triadic reciprocal determinism within the social cognitive theoretical perspective provided a framework for understanding how special educator factors such as, reading instruction practices and beliefs about intelligence interact with the non-cognitive mindset and self-efficacy beliefs of students with LD. The bidirectional interactions conceptualized by triadic reciprocal determinism facilitated an examination of the underlying factors correlated with low reading achievement outcomes for students with LD. However, the majority of current research focused on public school students with LD and in academic domains other than reading (Klassen, 2002; Shaywitz, Fletcher, Holahan, & Shaywitz, 1992). The limited number of empirical studies focused on the effect of special educators' mindset beliefs on students' self-efficacy beliefs, specifically for students with LD in the domain of reading, suggested the need for additional research.

Chapter 2

Empirical Examination of the Factors and Underlying Causes

Emerging empirical evidence supported the hypothesis that student mindset and academic self-efficacy can contribute to the prediction of academic outcomes beyond cognitive ability and knowledge (Blackwell et al., 2007; Dweck et al., 2011, Klassen, 2002; Pajares, 2002). Students with LD displayed fixed mindsets (Baird et al., 2009) and low academic self-efficacy more frequently than their peers without LD (Klassen, 2002). These underlying factors are associated with low academic achievement (Baird et al., 2009; Klassen, 2010). Another mindset hypothesis was that educators' mindsets affected students' mindsets (Dweck and Bempechat, 1983). My investigations revealed that limited empirical research exists regarding non-cognitive educator factors affecting the reading achievement of private school students with LD. Therefore, I intended to examine the hypothesized conceptual relationship between special educators' mindset beliefs and students' reading self-efficacy beliefs, as potential underlying factors contributing to the low reading achievement of upper elementary private school students with LD.

Context of Study

My educational context involved the interaction between the Learning Development Center (a pseudonym), students with LD, and private school special educators relative to student reading achievement. The LDC located in an east coast state was created in 1973 as a non-profit teacher training organization to serve private schools nationwide (Keafer, 2008). LDC's mission is to train and certify various degreed teachers to become LDC certified educational therapists and hence, provide educational therapy to students with LD (Hopkins, 1996). There are three levels of LDC courses, Level I, Level II, and Level III, each consisting of four weeks of online

coursework and a week-long face-to-face practicum. LDC coursework provides training in understanding psycho-educational assessments, conducting educational assessments, and developing individualized student intervention plans to strengthen the reading, writing, and mathematical abilities of students with LD. To become certified as an LDC educational therapist and provide educational therapy to students with LD requires 400 hours of coursework and 300 student contact hours. Educational therapy is a one-on-one intervention used in private schools by educational therapists to empower students with LD to develop their abilities to learn and strengthen core academic skills, such as, reading ability (NILD, 2017). In addition, the role educational therapists provide in K-12 private schools is similar to the role special educators provide in public schools (NILD, 2016). For example, educational therapists conduct assessment testing, write individualized education plans, provide academic intervention services and resource room support, and collaborate with classroom teachers regarding the educational goals of students with LD (NILD, 2016). Therefore, the target population for the needs assessment was educational therapists. Currently, more than 200 K-12 private schools across the United States employ or contract one or more LDC educational therapists to provide educational therapy to students with LD, which frequently includes literacy development (NILD, 2017).

Statement of Purpose

The purpose of the needs assessment was to identify the type of mindsets educational therapists hold and to examine the relationship between educational therapists' mindsets and self-efficacy for developing their students' reading self-efficacy. To facilitate the study, I selected a mixed-methods methodology consisting of qualitative and quantitative data. To address low reading achievement of upper elementary private school students and the possible

intervention of the needs assessment study, the following four research questions were explored (Table 1).

Table 1

Research Questions

Research Questions	
Research Question 1	To what degree do educational therapists understand the difference between fixed and growth mindsets?
Research Question 2	To what degree do they know the type of mindset that their student holds?
Research Question 3	To what degree do educational therapists believe they can help students develop a growth mindset?
Research Question 4	To what degree do educational therapists demonstrate self-efficacy for developing their students' reading self-efficacy?

Method

Research Design

In order to study the four needs assessment research questions, I used a concurrent mixed-method research design wherein quantitative and qualitative data were collected simultaneously through an author-developed survey, the Educational Therapists Needs Assessment questionnaire. The purpose of designing a mixed-method study was to gain a more comprehensive understanding of the relationship between educational therapists' mindsets and self-efficacy for developing students' reading self-efficacy. However, quantitative self-reporting measures can reflect a social desirability bias wherein participants agree with a statement to avoid seeming disagreeable (Schutt, 2015). Therefore, use of open-ended qualitative questions facilitated another angle by which to investigate participant responses. Triangulation of the quantitative and qualitative data was used to examine the hypothesis that educational therapists' mindsets are associated with teachers' self-efficacy for developing students' reading self-

efficacy. I used the Educational Therapist Survey to examine the four research questions. Table 2 shows my research design matrix which Choguill (2005) posited provides a schematic framework of what the researcher intends to do in the study.

Table 2

Research Design Matrix

Research Questions	Variables	Statistical Analyses
Research Question 1	1. Understand the difference between growth and fixed mindset 2. Define growth mindset 3. Define fixed mindset 4. Resources provided information about students' mindsets 5. Additional information want to know about students' mindsets	1. Measure of central tendency; Independent sample t-test; Pearson's r; Simple linear regression 2. Measure of central tendency 3. Measure of central tendency 4. Inductive coding 5. Inductive coding
Research Question 2	1. Identify students' mindset	1. Measure of central tendency; Pearson's r
Research Question 3	1. Develop students' growth mindset	1. Measure of central tendency; Pearson's r; Inductive coding
Research Question 4	1. Self-efficacy for developing students' phonics skills 2. Self-efficacy for developing students' phonological awareness skills 3. Self-efficacy for developing students' fluency skills 4. Self-efficacy for developing students' vocabulary skills 5. Self-efficacy for developing students' reading comprehension skills 6. Self-efficacy for developing students' broad reading skills	1-6. Measure of central tendency; Pearson's r; Simple linear regression

participants. To study the four needs assessment research questions, educational therapists (ETs) were recruited during LDC's annual education conference held in March 2017. During the conference's opening announcements, I explained the purpose of the study and invited attendees to participate if they were ETs working with fourth through sixth-grade

educational therapy students who struggle with reading. As an upper-level executive in LDC, as the researcher, I recognized the potential for participants to feel socially compelled to participate in the study. Therefore, I intentionally refrained from referencing participation in the study during any small group or individual interactions with conference attendees. Based on the demographic information obtained at the time of conference registration, of the 240 total educational therapist conference attendees, approximately 120 potential respondents met the study's inclusionary criterion. The study's participants ($N = 74$) work in thirty-seven different states. The majority (76%) worked in states located in the Southeastern geographical region of the United States, which was most likely due to the location of the conference. Ninety-five percent of participants indicated that they worked in small (< 500 students) private religious schools which was representative of LDC's current private school demographics. LDC requires the completion of three graduate courses (LDC Level I, II, and III) and 300 practicum hours to achieve professional certification (NILD, 2016). The majority of the participants, 64.9% were Level III trained. Of the two remaining ET groups, 10.8% were LDC Level II trained, and 24.3% were LDC Level I trained. The study's convenience sample was representative of the total population of LDC educational therapists (ETs) in the United States based on LDC's database (NILD, 2017).

measures and instrumentation. To explore the constructs of ETs' mindsets and self-efficacy for developing their students' reading self-efficacy within the context of LDC, I created a twenty-three item paper-and-pencil Educational Therapist Survey. In addition to six sample demographic questions, the survey included the three-item Theories of Intelligence Scale (TOI) survey created by Dweck & Henderson (1989). As indicated by Hong et al. (1999) "only three items are included because the items are intended to have the same meaning and

continued repetition of the same idea becomes somewhat bizarre and tedious to the respondents" (p. 590). Researchers Dweck and Henderson (1989) evaluated the psychometric properties of the Theories of Intelligence Scale (Dweck & Henderson, 1989) and indicated its high internal consistency (a = 0.94) and reliability (r = .80). An additional eight mindset questions were new and written to investigate ETs' mindset awareness. A Cronbach's Alpha test was used to determine the reliability of the quantitative portion of the Educational Therapist Survey. The internal consistency across all quantitative survey items was high (a = 0.85). Furthermore, there was no missing data on the quantitative survey items.

Also included in the Educational Therapist Survey were six questions to explore the constructs of ETs' self-efficacy for developing their students' reading self-efficacy within the context of LDC. Reading self-efficacy questions were adapted from the Student Academic Efficacy Scale and the Personal Teaching Efficacy Scale, two subscales from Midgley et al.'s (2000) Patterns of Adaptive Learning Scales (PALS). An example of an Educational Therapist Survey personal teaching efficacy question adapted from PALS (Midgley et al., 2000) was, "I can improve my students reading self-efficacy beliefs." The PALS measurement scale for academic self-efficacy had a high internal consistency (a = 0.86) and moderate stability (Ryan & Patrick, 2001). A copy of the Educational Therapy Survey is in the Appendix A. The 6-point Likert-scale included response options that ranged from *Strongly Agree* to *Strongly Disagree* which required participants to decide their level of agreement or disagreement without having a neutral response category. Table 3 shows the construct's definition, sample survey questions, and measurement:

Table 3

Educational Therapist Survey

Variable	Definition	Sample Survey Question	Measurement
Mindset Awareness	An awareness that an individual has implicit beliefs about the malleability of intelligence, either fixed or growth mindsets.	• *I am aware that there are different types of mindsets my students may hold, either growth or fixed mindsets.* • *I believe that students holding growth mindsets believe their intelligence is something they can change.* • *What additional information would you like to know concerning your students' mindset beliefs?*	• Three Likert-scale questions measuring ETs' mindsets (#7, 8, 9); two Likert-scale questions (#10, 14) and two open-ended questions (#15, 16) measuring ETs' awareness of students' mindsets; three Likert-scale questions measuring ETs ability to identify students' mindset types (#11, 12, 13); and one question measuring ETs' perceived ability to change students' fixed mindset (#17)
Reading Self-efficacy	Individual's belief about their capability to perform reading skills (e.g., phonics, phonemic awareness, fluency, vocabulary, and reading comprehension)	• *I can develop my students' beliefs that they can learn reading comprehension strategies.*	• Six Likert-scale questions measuring ETs' self-efficacy to develop students' reading self-efficacy (#18, 19, 20, 21, 22, 23)

procedure.

data collection methods. Each LDC 2017 conference attendee received a letter of consent which included the study's description, consent form, confidentiality assurance, the paper-based Educational Therapist survey, and instructions for completing the survey as part of their printed conference materials. As the researcher, I provided verbal instructions at the beginning of the conference to request that they volunteer to complete the survey by the conclusion of the

conference. Additionally, participants received verbal instructions to place completed surveys and signed consent forms in a lidded basket at the registration table. A total of 74 surveys were completed during the NILD conference with no missing data.

data analysis. Based on the total number of surveys returned ($n = 74$), compared to the estimated total possible participants meeting the study's inclusionary criteria ($N = 120$), the response rate was sixty-two percent. Fifty-four percent of the total sample participants provided qualitative responses to the two open-ended survey questions. The Likert-scale Theories of Intelligence Scale (Dweck & Henderson, 1989) questions and the self-efficacy Likert-scale questions used a Likert-scale response format that ranged from (1) *strongly agree* to (6) *strongly disagree.* During data analysis, these items were re-coded to match the remaining Likert-scale questions about ETs' awareness of the different types of mindsets which followed the conventional format of responses ranging from (1) *strongly disagree* to (6) *strongly agree*.

Descriptive and inferential statistics were used to analyze the quantitative data. Descriptive statistics including measures of central tendency provided mean scores that facilitated comparison of ET demographic information, categorization of ETs' mindsets as fixed or growth, and level of ET awareness of mindset types. Inferential statistics analysis included independent *t*-tests and Pearson Product Moment Correlation (Pearson's r). Independent *t*-tests compared participants' mean mindset scores and mean scores for awareness of mindsets based on "Years of ET Experience" as well as "Level of Experience." Pearson's r provided data about the linear relationship between the quantitative variables and the ETs' awareness of different types of mindsets and their self-efficacy for developing students' reading self-efficacy. Furthermore, Pearson's r was used to examine the correlation between ETs' self-efficacy for developing students' specific reading skills and overall reading self-efficacy. A simple linear

regression facilitated an examination of the predictive effect of the independent variables of ETs' awareness of mindset and ability to change students' fixed mindsets on the dependent variable, students' reading self-efficacy.

To analyze the qualitative data, I used an inductive coding procedure that was informed by the seven-step analytic procedure recommended by Strauss and Corbin (1997) to develop the codes and themes. I followed qualitative data analysis steps suggested by Strauss and Corbin (1997) in which the data was organized, read and re-read to look for recurrent language patterns the ETs used to respond to the open-ended questions. Then, I determined codes from the language used by ETs and generated themes by categorizing the codes. To help minimize researcher bias, after finalizing the codes and themes, an external reviewer reviewed the categories and themes and suggested changing one code description but concurred with the remaining codes and themes.

Findings and Discussion

In order to examine the relationship of ETs' mindsets and their self-efficacy for developing students' reading self-efficacy, the type of mindset ETs hold needed to be identified. As described in Dweck and Henderson (1989), mindset scores between one and three are considered fixed mindsets and scores between four and six are considered growth mindsets. Scores between 3.1 and 3.9 are considered to be neutral mindsets. The findings from the Educational Therapist Survey indicated 94.5% of ETs have a growth mindset as demonstrated by an overall mindset score of 5.7. There was no statistical difference between "Level of Experience" and mindset score. However, based on independent sample *t*-tests, there was a statistical difference between "Years of ET Experience" and mindset score, with the most

experienced ETs reporting the strongest growth mindset ($M = 5.9$). Table 4 illustrates the difference between "Years of ET Experience" and mindset score possessed by participants:

Table 4

Years of ET Experience Mindset Mean Score/Statistical Significance

Years of ET Experience	*M*	*t(55)*	*SD*
0-5	5.6		.5
6-10	5.6	2.4*	.5
10+	5.9	2.6**	.2

Note. * $p < .05$, two-tailed; ** $p < .01$, two-tailed

Findings for Research Question 1

Research question one (RQ 1) was, "To what degree do educational therapists know the difference between fixed and growth mindsets?" The majority of the educational therapist participants (91.2%) indicated an awareness that their students may hold different mindsets based on their response to the survey question, "*I am aware there are different types of mindsets my students may hold, either growth or fixed mindsets*." The total sample mean score ($M = 5.0$) associated with the survey questions #10 and #14 measuring ETs' awareness of students' mindsets corresponded with the "Agree" category on the Likert-scale. Furthermore, based on independent *t*-tests, there was a statistically significant difference ($p < .05$) between mean scores based on "Years of ET Experience" between participants with "0-5" years and "6-10" years of experience. Participants having "6-10" years of ET experience manifested the highest mean score ($M = 5.3$). The statistical difference suggests that experience working as an ET may increase ETs' awareness of students' mindsets. Because there was no statistically significant difference between mean scores based on "Level of Experience," future research with a larger sample or more questions would be helpful to determine if the lack of mindset information in the current ET certification coursework is associated with this finding. Additionally, participants'

mean scores examined in light of "Level of Experience," corresponded with different interval categories on the Likert-scale. For example, Level I educational therapist participants' mean score ($M = 4.7$) fell in the "*Mostly Agree*" category on the Likert scale. Alternatively, Level II and III ET participants' mean scores ($M = 5.1$) fell in the "*Agree*" category on the Likert-scale.

The differences in ETs' level of agreement with regard to mindset awareness reflected in the Likert-scale are similar to the qualitative findings about mindset awareness in that more Level II and Level III ETs responded to the open-ended questions than Level I ETs suggesting a possible greater awareness for mindsets. The first open-ended question related to the sources ETs used to learn about mindset information. An analysis of the responses to the open-ended question, "*What resources provided you information about student mindsets?*" yielded two themes and six coding categories. Table 5 illustrates the number of participant responses in the themes and categories for "*ET Mindset Resources:"*

Table 5

Response Codes Grouped by Theme and Category Central to ET Mindset Resources

Theme	Level I ETs	Level II ETs	Level III ETs
Theme 1 - Informal self-directed learning			
Books	1	0	11
Internet	0	2	4
Experience with students	2	2	1
Theme 2 – Formal educational training			
Continuing education workshops	0	0	11
College coursework	2	1	2
Professional development in-services	0	1	4

The majority of participant responses for Theme 1, *Informal Self-Directed Learning*, who indicated that books were the primary source of information about mindsets specifically identified Carol Dweck's books (7 out of 12 responses) as their source. Additionally, in Theme

2, *Formal Educational Training,* one participant stated, "We have become aware of Dweck's research and had training on it at my school."

The second open-ended question addressed students' mindsets. An analysis of the responses to the second open-ended question, "*What additional information would you like to know concerning your students' mindset beliefs*?" yielded two themes with four coding categories. The predominant category participants identified relative to more information about students' mindsets was how to change students' fixed mindsets. Additionally, Level I, II and III trained ETs expressed an interest in knowing the sources that contributed to their student's fixed or growth mindset. Table 6 illustrates the themes and categories for "*Additional Mindset Information ETs Want to Know*:"

Table 6

Response Codes Grouped by Theme and Category Central to Additional Mindset Information

Theme	Level I ETs	Level II ETs	Level III ETs
Theme 1 – Theory to practice			
Strategies for changing fixed mindsets	3	1	9
How to identify mindsets	1	1	1
Theme 2 – Student awareness			
Communicate mindset/achievement link	0	1	2
Sources of mindset	2	1	2

Lastly, I used Pearson's r correlation and simple linear regression statistical analyses to further examine the relationship between educational therapists' awareness of students' mindsets and their ability to develop students' reading self-efficacy. Based on Pearson's r correlation, ETs' awareness of students' mindsets was correlated with their perception of their ability to develop students' reading self-efficacy ($r = .4$, $p < .001$, two-tailed). Furthermore, while there

was not a specific research question that addressed predictor variables, a linear regression statistical analyses provided another way to examine the impact of the degree to which ETs awareness of students' mindsets relates to developing students' reading self-efficacy. Based on simple linear regression modeling, educational therapist participants' awareness of students' mindsets was a predictor for ETs' perception of their ability to develop their students' reading self-efficacy ($\beta = 2.0$, $t = 2.7$, $p < .01$).

Overall, the descriptive and inferential statistical analyses indicated ETs with more than five years of ET Experience had higher mindset awareness mean scores and a stronger level of agreement with perceived mindset awareness on the Likert-scale than ETs with 0-5 years of experience. Table 7 provides an overall analysis of the descriptive and inferential findings for "*ET Mindset, Mindset Awareness/Years of Experience,*" as well as mindset awareness and its correlation with ETs' perception of their ability to develop students' reading self-efficacy:

Table 7

ET Mindset, Mindset Awareness/Years of ET Experience

Constructs	0-5 Years $n = 31$	6-10 Years $n = 17$	10+ Years $n = 26$	Total Sample $N = 74$
ET Mindset	$M = 5.6$, $SD = .5$	$M = 5.6$, $SD = .5$	$M = 5.9$, $SD = .2$, $p < .01$	$M = 5.7$, $SD = .4$
Awareness of Students' Mindset	$M = 4.8$, $SD = 1.1$	$M = 5.3$, $SD = .6$	$M = 5.2$, $SD = .6$	$M = 5.0$, $SD = .6$, $\beta = 2.0$, $t = 2.7$, $p < .01$
Developing Students' Reading Self-Efficacy	$r = .6$, $p < .001$	$r = .6$, $p < .01$	$r = -.04$, $p < .01$	$r = .4$, $p < .001$

Findings for Research Question 2

Research question two (RQ 2) was, **"**To what degree do educational therapists know the type of mindset that their student holds?" The majority of the participants (78.3%) agreed with

the statement, "*I can identify my students' mindsets as either fixed or growth.*" The total sample mean score ($M = 4.8$) associated with the survey questions #11, #12, and #13 measuring ETs' ability to identify students' mindset corresponded with the "Mostly Agree" category on the Likert-scale. Participants' ability to identify their students' mindset type demonstrated a weak positive correlation with developing students' reading self-efficacy ($r = .3$, $p < .01$, one-tailed). Based on simple linear regression modeling, educational therapist participants' ability to identify students' mindset was a predictor for ETs' perception of their ability to develop their students' reading self-efficacy ($\beta = 3.1$, $t = 3.9$, $p < .01$). An examination of Research Question 2 by participant "Years of ET Experience," indicated a high level of agreement exists across the three professional levels. Table 8 illustrates the findings in Research Question 2 by "Years of ET Experience" possessed by participants:

Table 8

Mean Score – "Identifying Students' Mindsets"

ET Years of Experience	*M*	*SD*
0-6 ($n = 31$)	4.9	.6
6-10 ($n = 17$)	5.0	.5
10+ ($n = 26$)	4.7	.6

Findings for Research Question 3

Research question three (RQ 3) was, "To what degree do educational therapists believe they can help students develop a growth mindset? Overall, participants expressed a high level of agreement (85.1%) with the statement, "*I am able to help students with a fixed mindset develop a growth mindset.*" Additionally, the total sample mean score was 5.0 which corresponded with the "*Agree*" category on the Likert- scale. Based on Pearson's r correlation, participants' ability

to foster students' mindset change was not correlated with developing students' reading self-efficacy which suggests that in this study, there is not a relationship between the variables. However, because of the reciprocal interaction between mindset beliefs and academic achievement (Grant & Dweck, 2003), future research to examine if ETs' ability to foster students' mindset change from fixed to growth correlates with academic achievement warrants further investigation. An examination of Research Question 3 by participant "Level of Experience," indicated a high level of agreement exists across the three professional levels. Table 9 illustrates the findings in Research Question 3 by "Level of Experience" possessed by participants:

Table 9

Mean Score – "Changing Student Mindsets from Fixed to Growth"

ET Professional Level	*M*	*SD*
I (n = 18)	5.0	0.7
II (n = 8)	5.2	0.8
III (n = 48)	5.0	1.0

However, the qualitative findings challenged the apparent pattern of the high level of agreement among participants who perceived they could change their students' fixed mindsets. Nineteen of the 74 respondents answered the open-ended question, "*What additional information would you like to know concerning your students' mindset beliefs?"* Four Level I participants, three Level II, and 12 Level III participants responded to this question with the majority (65%) indicating they wanted to know strategies for how to change their students' fixed mindsets. Furthermore, the majority (69%) who indicated they wanted to know strategies to change their students' mindsets were Level III ETs.

Findings for Research Question 4

Research question four was, "To what degree do educational therapists demonstrate self-*efficacy for developing their students' reading self-efficacy?* Overall, participants expressed a high level of agreement (94.6%) with the statement, "*I can improve my students' reading self-efficacy beliefs.*" Additionally, the total sample mean score of 5.3 corresponded with the "*Agree*" category on the Likert-scale. Furthermore, the participant level of agreement with their ability to develop "Reading Components," was equivocal and at a high level of agreement. For the purposes of this study, "Reading Components" was defined as the five essential components of literacy as determined by the National Reading Panel (2000). The five essential components of literacy identified by the National Reading Panel (2000) are phonics, phonological awareness, fluency, vocabulary, and reading comprehension. Table 10 illustrates the "Reading Components" mean scores related to developing students' reading self-efficacy:

Table 10

Educational Therapists' Self-Efficacy for Facilitating Student Reading Self-Efficacy

Reading Components	*M*	*SD*
Phonics	5.3	.9
Phonological Awareness	5.3	.9
Reading Fluency	5.3	,9
New Vocabulary	5.3	.9
Reading Comprehension Strategies	5.2	.9

Furthermore, statistically significant correlations ranging from $r > .8$ to $r > .9$ were also found between each of the five "Reading Components" and ETs' self-efficacy for developing their students' "broad reading" self-efficacy. For the purposes of this study, "Broad Reading" is defined as a composite reading ability that encompasses all five essential components of literacy as defined by the National Reading Panel (2000). Table 11 illustrates the correlation findings for the individual reading components and "broad reading" self-efficacy.

Table 11

Correlation of Reading Components and Broad Reading Self-Efficacy

Reading Components	*r*	*p* (2-tailed)
Phonics	.8	$p < .001$
Phonemic Awareness	.8	$p < .001$
Reading Fluency	.8	$p < .001$
New Vocabulary	.8	$p < .001$
Reading Comprehension Strategies	.9	$p < .001$

Note. $N = 74$

Of the five reading components being examined for correlation with "Broad Reading," participant self-efficacy in the area of "Reading Comprehension Strategies" demonstrated the strongest correlation with regard to developing student self-efficacy in "Broad Reading" ($r = .9$, $p < .001$), a composite of reading ability that encompasses all five essential components of literacy. However, based on linear regression modeling, educational therapists' self-efficacy in the area of "Reading Comprehension Strategies" was the only component of reading that exerted a strong predictive effect upon developing students' broad reading self-efficacy ($\beta = 0.9$, $t = 20.2$, $p < .001$).

Conclusions and Future Study

Overall, these findings revealed that educational therapists (ETs) in this study held growth mindsets and possessed high levels of efficacy in terms of developing their students' reading self-efficacy. Additionally, the ETs' mindset awareness, ability to identify students' mindset as fixed or growth, and ETs' self-efficacy for developing students' reading comprehension strategies correlated with ETs' self-efficacy for developing students' reading self-efficacy; and subsequently were predictor variables. While the majority of participants (91.2%) reported that they were aware that their students might hold different types of mindsets,

Level I ET participants' mean score ($M = 4.7$) indicated this level of agreement was in the "*Mostly Agree*" category on the Likert-scale. However, Level II and Level III ET participants' mean scores ($M = 5.1$) indicated their level of agreement was in the "*Agree*" category on the Likert scale. Stated another way, Level I ETs' demonstrated a lower level of perceived mindset awareness based on the interval Likert-scale categories. Level I ETs have the least amount of experience working with students in educational therapy. It is possible that experience working with students strengthens ETs' awareness of students' mindsets. Since ETs' mindset awareness and ability to identify students' mindset type are correlated with developing students' reading self-efficacy and are also predictor variables, this warrants further research to identify underlying factors impacting Level I ETs' awareness of students' mindsets. The findings from this needs assessment study did not indicate that ETs' growth mindsets correlated with developing students' reading self-efficacy.

Although this needs assessment focused on ETs, students with LD, and the academic domain of reading, the initial needs assessment analysis reflected similar findings in the broader literature that indicated educators expressing growth mindsets correlated with high self-efficacy. Furthermore, the initial needs assessment findings offered insights into the relationship between ETs' mindsets and their self-efficacy for developing their students' reading self-efficacy. In order to consider future research, a discussion of limitations and suggestions for additional areas to examine followed.

In addition to being the researcher, I have an educational therapist (ET) background. As a result, despite having external experts in the field of educational therapy review the Educational Therapist Survey for potential biases, it is possible that the survey questions contained unwarranted assumptions. For example, I have knowledge of the type of ET

certification coursework that develops ETs' ability to teach the five essential components of literacy (NILD, 2016). Therefore, I assumed that ETs understood the definitions and skills associated with phonics, phonological awareness, fluency, vocabulary, and reading comprehension. However, this may be an inaccurate assumption. Thus, participants' responses may reflect inaccurate self-perceptions based on misinformation about reading skills. Also, as discussed earlier, based on my leadership role in LDC, there was the potential for subject bias in the way participants completed the survey. The answers ETs provided might reflect responses that they thought I expected based on my knowledge of the content ETs receive in their LDC training. Lastly, based on the small sample size, and the lack of student reading achievement data to compare reading achievement to ETs' self-efficacy for developing students' reading achievement, further research is needed before being able to generalize the study's findings.

Chapter 3

Intervention Literature Review

Reading serves as a conduit for learning (Podhajski et al., 2009) and is a requisite skill for academic achievement for all students (Cortiella & Horowitz, 2014). However, of the quarter of a million K-12 private school students with learning disabilities (Kena et al., 2016), approximately 80% have difficulty learning to read (Shaywitz, 1998). According to the recent 2015 National Assessment of Educational Progress (NAEP, 2015), 53% of fourth-grade private school students with learning disabilities (LD) earned below basic reading scores compared to 18% of their private school peers without LD. Emerging empirical evidence highlights the connections between non-cognitive factors, learning, and achievement (Immordino-Yang & Damasio, 2007) supporting the hypothesis that non-cognitive factors contribute to academic achievement outcomes (Blackwell et al., 2007; Dweck et al., 2011; Klassen, 2002; Pajares, 2002). Specifically, psychological beliefs including self-efficacy and mindsets are non-cognitive factors affecting the reading achievement of students with LD (Baird et al., 2009). Self-efficacy is defined as a person's beliefs about their abilities to perform a specific task within a particular academic domain (Pajares, 1996), can affect cognitive engagement, willingness to use learning strategies, motivation for the particular reading task, and academic achievement (Baird et al., 2009; Klassen, 2002; Linnenbrink & Pintrich, 2003). In addition to self-efficacy beliefs affecting academic engagement, mindset beliefs can also affect learning effort and academic achievement (Blackwell et al., 2007; Dweck, 2000).

Mindsets are individuals' beliefs about the malleability of intelligence and are psychological beliefs which can affect students' level of effort in learning and subsequently academic achievement (Dweck et al., 2011; Schmidt, Shumow, & Kackar-Cam, 2017; Wigfield

& Eccles, 2000). In addition to the level of effort invested in learning, mindset beliefs can further impact learning and achievement by influencing the type of learning goals students bring to the achievement context (Dweck, 2000; Dweck & Leggett, 1988; Grant & Dweck, 2003; Hong et al., 1999, Robbins & Pals, 2002). Research indicates that students with a growth mindset, which is the belief that intelligence is malleable, adopt mastery learning goals (Blackwell et al., 2007; Dweck, 2000) such as goals to develop academic competency and personal progress (Shim et al., 2013). Comparatively, students with a fixed mindset, which is the belief that intelligence is static, adopt performance learning goals (Dweck, 2000) such as goals to demonstrate academic competence or to avoid demonstrating academic incompetence (Shim et al., 2013). According to Shim and colleagues (2013), the commonly occurring effect noted in the extant learning goal research is that mastery goals and performance learning goals are associated with adaptive and maladaptive learning and achievement outcomes respectively. Students with LD display performance learning goals, fixed mindsets, low self-efficacy, and low achievement more frequently than their non-LD peers (Baird et al., 2009; Hampton & Mason, 2003; Klassen, 2010). Within the learning environment, educators' instructional practices (e.g., type of feedback provided) can shape students' academic self-efficacy and mindset beliefs (Good et al., 2007; Dweck, 2008).

The following section discusses how the framework of a social cognitive theoretical perspective provides a lens to examine intervention literature focused on the non-cognitive factors of self-efficacy, mindset beliefs, and educator instructional practices affecting the reading achievement of students with LD.

Social Cognitive Theory and Triadic Reciprocal Determinism

Social cognitive theory (SCT) posits that the personal beliefs people have about themselves are key elements that provide some control over thoughts, feelings, and behaviors (Bandura, 1986). Bandura (1986) suggests that the beliefs that people hold about their abilities and the outcomes of their efforts influence how they behave. Therefore, how individuals interpret the results of their efforts and performance informs and changes their environments and their self-beliefs, which subsequently informs and changes their performance (Pajares, 1996). Bandura (1986) describes the dynamic interaction between beliefs, behaviors, and environment as triadic reciprocal determinism (TRD). Hence, the theoretical framework for examining the intervention literature focused on non-cognitive factors and educators' instructional practices is based upon Bandura's (1986) SCT and TRD philosophy that personal beliefs can influence the learning environment, shape behaviors, and affect achievement outcomes, which in turn, inform and reinforce personal beliefs. A conceptual framework (Figure 1) identified the underlying variables examined in the intervention literature that affected the reading achievement outcomes for students with LD. The solid arrow lines in the diagram represent empirically established relationships between variables.

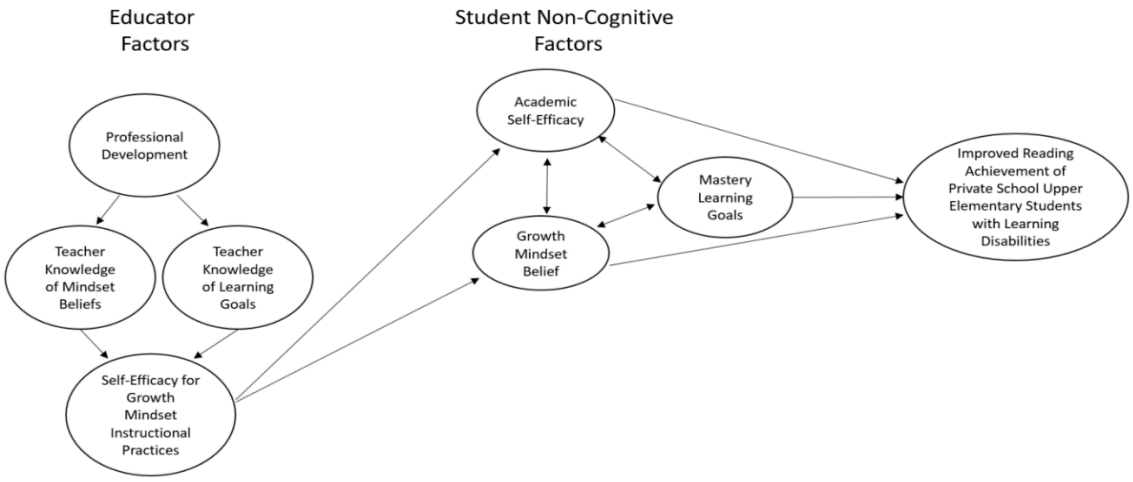

Figure 2. Conceptual Framework of Educator and Student Factors.

Educational Therapists' Awareness of Mindset Information

Educational therapists (ETs) are private school special educators who provide one-on-one cognitive and academic intervention to students with LD. Based on the empirical literature that indicates educators' instructional practices can impact students' academic self-efficacy, mindset, and learning goals (Good et al., 2003; Dweck, 2008), I conducted a mixed-methods study with ETs ($N = 74$) to examine ETs': (a) mindset type, (b) self-efficacy beliefs, and (c) general awareness of mindset information. In the study, 94.5% of the participants reported having growth mindsets, and 94.6% indicated high self-efficacy for developing their students' reading self-efficacy. A general awareness of mindset information includes having received training related to mindsets and a familiarity with the concept of growth mindset in K-12 education (Snipes, Fancsali, & Stoker, 2012; Yettick, Lloyd, Harwin, Reimer, & Swanson, 2016). Within my professional context, thirty-two percent of the ETs surveyed wanted information about mindsets, and 22% of participants indicated that the Learning Development Center's (LDC) ET certification course did not provide enough information about mindsets (Barbour, 2017). The

needs assessment findings are similar to the outcomes from a recent national survey conducted by Education Week Research Center (Yettick et al., 2016) examining K-12 teachers' experiences with training in mindset information. Forty percent of survey respondents ($N = 603$) reported having had no training related to mindsets but that they wanted training on mindsets.

The next section discusses the empirical literature relative to the proposed intervention study to revise the Learning Development Center's ETs' certification training to incorporate non-cognitive psychological factors into the coursework.

Literature Review

Currently, LDC's educational intervention programs focus on training ETs to address cognitive factors rather than non-cognitive beliefs affecting the academic achievement of students with LD. Therefore, based on the findings from my mixed-method study, in combination with the empirical evidence indicating bi-directional interaction between students' non-cognitive factors and educators' instructional practices on learning and achievement (Blackwell et al., 2007; Farrington et al., 2012), the intervention was to revise the ET certification course to incorporate non-cognitive factors. Based on TRD and the social-cognitive model of learning and achievement as depicted in the conceptual framework (Figure 1) the following literature review examined two overarching areas of research that investigated the methods for educators to address non-cognitive psychological factors affecting the low reading achievement of students with LD and the instructional practices required to address these issues. First, the literature review discussed intervention studies primarily within the domain of reading that aimed to improve student reading achievement outcomes by enhancing students' self-efficacy beliefs and developing students' growth mindset. Second, the literature review synthesized research on professional development training which facilitated teachers'

professional knowledge and improved teachers' self-efficacy beliefs when implementing instructional practices that affected the reading achievement of LD students.

Interventions Addressing Self-Efficacy Beliefs

Self-efficacy is a construct within SCT (Bandura, 1986) and it is an important variable in cognition, metacognition, motivation, and learning (Chapman & Tunmer, 2003). Bandura (1993) posited that competency in learning requires skills and self-efficacy beliefs to use the skills effectively. In the context of reading, the motivational influence of self-efficacy determines whether opportunities to read are sought or avoided, the amount of effort expended while reading, and the degree of persistence while pursuing comprehension (Chapman & Tunmer, 2003; Gaskill & Murphy, 2004). According to Schunk (2003), "interventions designed to enhance students' acquisition of reading skills must also address their self-efficacy for learning to influence learning and motivation" (p. 162). Researchers examining the role of self-efficacy in learning indicate that interventions enhancing students' perceptions of self-efficacy are highly predictive of subsequent engagement in learning and achievement across the major academic domains (Pajares & Cheong, 2003; Schunk & Ertmer, 2000; Sideridis & Scanlon, 2006). Researchers have examined whether enhancing students' self-regulatory learning, which is the ability to manage thinking, motivation, emotions, and behaviors within learning environments might positively affect students' self-efficacy and subsequently reading performance (Antoniou & Souvignier, 2007; Klassen, 2010; Nelson & Manset-Williamson, 2006).

using self-regulatory reading strategies to improve reading self-efficacy.

Metacognition is the ability to monitor one's thinking and use of learning strategies (Snipes et al., 2012), and is important for reading comprehension as, students use the strategy of asking

themselves if what they are reading is making sense (Flavell, 1979). Students who have strong metacognitive skills use self-regulatory reading strategies such as intentional selection of specific reading strategies and self-evaluation, as a means to improve comprehension (Horner & Shwery, 2002). Therefore, researchers hypothesized that teaching students with LD to use self-regulatory reading strategies will likely produce an increase in reading self-efficacy (Antoniou & Souvignier, 2007; Nelson & Manset-Williamson, 2006). In two similar experimental studies, researchers Antoniou and Souvignier (2007) and Nelson and Manset-Williams (2006) examined the effects of training students with LD to use self-regulatory reading strategies on students' reading self-efficacy and reading comprehension skills. Antoniou and Souvignier (2007) conducted a year-long quasi-experimental study with 73 fifth through eighth-grade students with LD in 27 classrooms in Germany. The self-regulation strategies explicitly taught to students in the treatment group (14 classrooms) monitored comprehension and the use of a reading plan accompanied by a checklist as a reminder to use reading strategies such as, summarizing the text and connecting to prior knowledge. The students in the control group (13 classrooms) received instruction only in reading strategies. The outcomes from Antoniou and Souvignier's (2007) study indicated that the students in the treatment group outperformed the control group on the reading comprehension measure [$t(71) = 3.19$, $p = .002$, $d = .80$]. Furthermore, students in the treatment group demonstrated improved self-efficacy beliefs compared to students in the control group [$t(71) = 3.36$, $p = .001$, $d = .78$].

Similarly, in Nelson and Manset-Williamson's (2006) study, 20 fourth through eighth-grade students with LD participated in 20 hours of reading comprehension strategy instruction focusing on predicting, summarizing, and generating questions either in a Guided Reading control group ($n = 11$) or an Explicit Comprehension treatment group ($n = 9$). Participants in the

Explicit Comprehension treatment group also received explicit training in self-regulatory procedures such as goal setting to improve learning, to use the strategies to understand the text and self-monitor better. The findings from Nelson and Manset-Williams' (2006) study also demonstrated that strategy instruction had positive effects on students' reading comprehension skills. Students in the Explicit Reading treatment group showed greater comprehension gains from pretest to posttest than those in the Guided Reading group [$F(1, 17) = 5.76$, $p < .05$, $d = 1.07$]. Between-conditions comparisons indicated that the difference in the pretest reading self-efficacy score approached statistical significance [$F(1, 17) = -3.39$, $p = .09$, $d = .52$]. Participants in the Explicit Comprehension treatment condition did not make statistically significant gains in reading self-efficacy. However, the students' posttest reading self-efficacy scores in the Guided Reading control condition approached statistical significance, $t(9) = 2.09$, $p = .07$, $d = .66$. Nelson and Manset-Williams (2006) explain this finding as possibly stemming from participants' inaccurate estimates of reading comprehension abilities because participants in both groups demonstrated high pretest reading self-efficacy despite below average performances on pretest measures of reading comprehension. These findings align with Hampton and Mason's (2003) study and Pintrich et al.'s (1994) study that also indicates students with LD inaccurately calibrate their self-efficacy beliefs, showing a tendency to overestimate their academic skills. Therefore, the researchers' conclusion that as a result of the explicit instruction in self-regulation, participants in the Explicit Comprehension treatment condition were able to more accurately appraise their reading skills compared to those in the Guided Reading group (Nelson & Manset-Williams, 2006) appears to be warranted.

Overall, while the small sample sizes ($N = 73$) in Antoniou and Souvignier's (2007) study and Nelson and Manset-Williamson's (2006) study ($N = 20$) limited the studies' generalizability,

the outcomes have implications for practice. The studies demonstrated that the use of explicit instruction in self-regulatory reading comprehension strategies positively affected reading achievement in students with LD. Together, the findings from these two studies also contribute empirical support for the hypothesis that teaching students with LD to use self-regulatory reading strategies will likely produce an increase in reading self-efficacy (Antoniou & Souvignier, 2007; Nelson & Manset-Williamson, 2006).

While Antoniou and Souvignier (2007) and Nelson and Manset-Williamson (2006) found that the reading self-efficacy of upper elementary students with LD could be enhanced, other researchers examined whether children under the age of nine have the cognitive capacity to make the judgments necessary for deriving self-efficacy beliefs (Gaskill & Murphy, 2004). Self-efficacy beliefs develop through past performances, vicarious learning, social persuasion, and emotional arousal (Bandura, 1986). Because students with LD have significantly less past accomplishments and less positive reinforcement from others, they tend to have lower self-efficacy beliefs compared to their peers without LD (Hampton & Mason, 2003). From a developmental perspective, self-efficacy beliefs are most malleable in early learning experiences (Bandura, 1978). The learning experiences young children have in the first few years of school lead them to develop self-efficacy beliefs that become increasingly stabilized (Gaskill & Murphy, 2004). Therefore, teaching strategies that have the potential for improving performance is an approach that may boost young children's judgments that they are more efficacious for performing a task in the future (Wang & Charde, 1987).

using memory strategy instruction to improve self-efficacy. In Gaskill and Murphy's (2004) randomized controlled mixed-methods study of forty 2nd-grade students, the researchers sought to determine how learning a memory strategy impacted performance on a memory task

and students' self-efficacy. The students in the treatment group received 15 minutes of training on a strategy for organizing 16 vocabulary words into four categories to increase their ability to remember word lists. Students in the control group received no memory strategy instruction. The researchers collected quantitative data a total of four times, before the three trials and following the final trial. Students' predictions regarding how many words they could recall after 2 minutes of study provided the measure of self-efficacy for the task. The extent to which students recalled and clustered the words into categories provided the measure for memory performance. Observations regarding children's use of the memory strategy and interviews that focused on children's perception of their memory ability as well as their explanation for how they recalled the words provided the qualitative data.

While the memory strategy used in Gaskill and Murphy's (2004) study involved categorizing words for efficiency of recall and was different than the self-regulatory reading strategies used in Antoniou and Souvignier's (2007) study and Nelson and Manset-Williamson's (2006) study, similar results were found in terms of impact on students' self-efficacy beliefs. Results of Gaskill and Murphy's (2004) study indicated that students trained to use a memory strategy for recall outperformed the untrained students in the control group on the memory task Trial 2 [$F(1, 38) = -21.32$, $p < .0001$] and Trial 3 [$F(1,38) = -21.6$, $p < .0001$]. Furthermore, students trained in the memory recall strategy also predicted higher levels of future recall performance for Trial 2 [$F(1,38) = 4.26$, $p < .05$,], for Trial 3 [$F(1,38) = 4.84$, $p < .03$] and the final prediction [$F(1,38) = -25.05$, $p < .0001$] compared to their untrained counterparts, indicating that their self-efficacy for the task increased. Insights from the observations and interviews suggested students in the experimental group used the sorting memory strategy and related their success for recall to the strategy use.

Although Gaskill and Murphy's (2004) study demonstrated that young students who learn a memory strategy use it with positive influences on their task performance and that the strategy increases their self-efficacy to perform a future memory task, the generalizability of the study's findings was limited based on the homogeneous age group of the participants. Also, there was no measure of the students' application of the memory strategy in a classroom-based context. Additionally, the brief period of the overall study and the short length of memory strategy training students received raise questions as to the length of time students would retain use of the memory strategy or the related benefits in classroom performance and self-efficacy. Nevertheless, the Gaskill and Murphy's (2004) study contributed useful information from a developmental perspective in that their findings indicated support for Bandura's (1978) hypothesis that self-efficacy beliefs are malleable and can be developed in the young child. Within the context of students with LD, teaching young students strategies to enhance learning performance may subsequently become a source of past accomplishments that could positively contribute to their self-efficacy beliefs.

The following section continues an examination of learning and achievement within the framework of SCT and TRD (Bandura, 1986). Empirical literature indicated that there is an association between self-efficacy beliefs and learning goals (Baird et al., 2009; Cury et al., 2006). The subsequent paragraphs highlight experimental research examining how teaching students with LD to use mastery learning goals impacts self-efficacy beliefs.

learning goals and interventions. At the start of a learning activity, students have learning goals and a sense of self-efficacy for learning (Schunk, 2003). However, the type of learning goals students bring to the achievement context leads to different cognitive, emotional, and behavioral processes (Shim et al., 2013) subsequently impacting motivation and

achievement (Grant & Dweck, 2003). Two primary learning goals are thought to influence achievement behavior: mastery goal and performance goal. Mastery learning goals are goals that focus on developing one's competence through understanding and growth (Linnenbrink, 2005). Students with mastery learning goals typically persist in the face of learning challenges (Grant & Dweck, 2003), and seek to enhance their abilities by developing effective strategies or master a new task (Dweck & Leggett, 1988; Elliott & Dweck, 1988). Performance learning goals are goals that focus on demonstrating one's competence by validating ability or avoiding demonstrating a lack of ability (Linnenbrink, 2005). Students demonstrating performance learning goals seek easy learning tasks to validate their ability and demonstrate a helpless response when facing challenges (Elliott & Dweck, 1988). Researchers Pintrich & DeGroot (1990) suggested performance learning goals facilitated low self-efficacy beliefs, and mastery learning goals facilitated high self-efficacy beliefs. Intervention research suggested that developing students' use of mastery learning goals affected students' self-efficacy beliefs and academic achievement positively (Linnenbrink, 2005; Pajares, Britner, Valiante, 2000: Schunk & Rice, 1989; Schunk & Rice, 1991).

using learning goal instruction to improve self-efficacy. In an experimental study conducted with 33 fourth and fifth-grade students with LD, Schunk and Rice (1989) explored the effects of performance and mastery learning goals on reading comprehension and self-efficacy. The researchers randomly assigned students within gender and grade level to one of the three experimental conditions (n = 11 per condition): performance goal, mastery goal, and control group. The researchers created the self-efficacy scale and the comprehension skill test used in the study, and they had a test-retest reliability coefficient of .82 and .87, respectively. At the start of each of the 15 sessions, students received either a performance learning goal instruction

that reminded them to try to answer questions about what they read or a mastery learning goal instruction that reminded them to try to learn how to use the main idea strategy to answer questions about what they read. Alternatively, students in the control group were instructed to try to do their best. The outcomes from Schunk and Rice's (1989) study indicated that students receiving mastery goal instructions reported higher self-efficacy for answering comprehension questions ($p < .05$) compared to students in the control condition and demonstrated significantly higher comprehension skill compared to students in the control condition ($p < .01$). Additionally, the findings demonstrated significant correlations between posttest self-efficacy and reading comprehension ($r = .31$, $p < .05$).

Schunk and Rice (1991) conducted a follow-up study with 30 students with LD from two 5th-grade classes to investigate the effects of goals and goal progress feedback on reading comprehension and self-efficacy. All experimental conditions were similar to Schunk and Rice's (1989) study, except in the follow-up study, students in the third condition were given a mastery goal plus progress feedback (e.g., "You are learning to use the steps") (Schunk & Rice, 1991, p. 359). The researchers used the same pre-and posttest reading comprehension and self-efficacy measures in this study as in their earlier study. The study's findings showed that students in the mastery goal plus feedback treatment condition reported higher self-efficacy beliefs ($p < .05$) and reading comprehension scores ($p < .05$) compared to students in the other treatment conditions.

Although the sample sizes for Schunk and Rice's (1989) study and their follow-up study (1991) were small, the similarity of participants' age and identified reading disabilities enhanced the studies' generalizability to students with LD working with ETs. Overall, the outcomes from the two studies suggested that interventions teaching students to use mastery learning goals positively affected reading achievement and self-efficacy beliefs. Furthermore, Schunk and Rice

(1991) concluded that when students pursue mastery learning goals in combination with teacher feedback about their learning, it enhanced students' self-efficacy because students may feel they have greater control over their learning. Schunk and Rice's (1991) conclusion aligned within the framework of SCT, as Bandura (1986) believed that developing students' ability to direct their learning is an avenue to strengthen the human agency aspect of learning. However, in addition to self-efficacy beliefs, there are other non-cognitive factors that can affect the reading achievement of students with LD. Students' mindset beliefs are other non-cognitive factors that can positively or negatively impact learning goals and academic achievement (Dweck, 2000; Paunesku et al., 2015). Furthermore, there is empirical evidence supporting the hypothesis that mindsets are malleable (Blackwell et al., 2007) and that teachers' instructional practices can shape students' mindsets (Dweck, 2008). Therefore, the following section examines intervention literature focused on how mindset beliefs can impact academic achievement (Dweck, 2000; Paunesku et al., 2015).

Interventions Addressing Mindset Beliefs

Implicit theories of intelligence, also called mindsets, are an individual's core assumptions about the malleability of intelligence (Dweck, 2006). The two opposing views of intelligence are either a growth mindset, the belief that individuals have some degree of control over their intelligence; or fixed mindset, which is the belief that intelligence is genetically predetermined and is static (Dweck & Leggett, 1988). Students holding a fixed mindset do not expect their learning efforts to produce significant academic improvements and express low self-efficacy (Baird et al., 2009). Subsequently, a fixed mindset influences choice of tasks, effort, persistence, and academic motivation (Cury et al., 2006). Students holding a growth mindset believed expending effort and learning new skills developed their intellectual ability (Dweck,

2000). Interventions that addressed students' fixed mindset aimed to alter the way students thought and felt about their intelligence in the course of their school-day to address underlying psychological factors that impacted learning (Yeager & Walton, 2011). There is agreement in the empirical literature that the extent to which students will invest effort in learning is dependent upon whether or not they believe their ability is malleable (Dweck, 2000; Schmidt et al., 2017; Wigfield & Eccles, 2000).

using growth mindset information to improve academic achievement. Mindset interventions highlighted the important role that students' psychological beliefs have in influencing educational outcomes (Yeager, Trzesniewski, & Dweck, 2013). Intervention studies examining the interaction of mindset beliefs, learning behaviors, and achievement indicate that students with a growth mindset outperform students with a fixed mindset on achievement measures (Blackwell et al., 2007; Good et al., 2003; Paunesku et al., 2015). Because students holding a fixed mindset do not expect their learning efforts to produce significant academic improvements (Baird et al., 2009), students with a fixed mindset demonstrate helpless patterns of behavior in approaching academic tasks (Dweck & Henderson, 1989). Helplessness is the belief that actions are irrelevant to subsequent outcomes (Diener & Dweck, 1980). Helpless behavioral responses inhibit students from confronting challenges and can limit their academic achievement (Dweck & Leggett, 1988). Students with a growth mindset are likely to value learning, demonstrate resilient responses to setbacks and have higher academic achievement (Blackwell et al., 2007; Romero, Master, Paunesku, Dweck, & Gross, 2014).

Paunesku and colleagues (2015) conducted an experimental study with 1,594 high school students attending 13 different public and private schools to investigate the effects of a growth mindset intervention on students' beliefs about the malleability of intelligence and academic

performance. Paunesku et al. (2015) hypothesized that because growth mindset interventions help students to view academic challenges in a way that promotes learning and resilience, the intervention may be most beneficial for low performing students. Students in the mindset treatment group received information about developing a growth mindset based on the brain's ability to develop as a consequence of hard work and using strategies for challenging tasks. Students in the control group did not receive information about how studying and hard work can develop intelligence but rather, information about how schoolwork could facilitate accomplishing meaningful life goals. Paunesku et al. (2015) assessed students' mindset beliefs using two items from Dweck and Henderson's (1989) Theories of Intelligence Scale: "You can learn new things, but you can't really change your basic intelligence" and "You have a certain amount of intelligence, and you really can't do much to change it" (p. 788). Based on logistic regression analysis, students in the mindset treatment group had more malleable beliefs about intelligence compared to the control group. Furthermore, students with poor academic performance were significantly more likely to earn satisfactory semester grades (e.g., A, B, or C) in core academic classes after the intervention ($p = .029$) compared to the underperforming students in the control group (Paunesku et al., 2015).

Research examining mindset interventions specifically within the context of reading indicates that developing students' growth mindsets correlates with improvement in reading achievement (Good et al., 2003; Petscher, Otaiba, Wanzek, Rivas, & Jones, 2017). Good and colleagues (2003) conducted a quasi-experimental study in which they examined the effects of providing students with a growth-oriented view of intelligence on reading achievement. The researchers assigned 138 seventh-grade students to college mentors who provided either growth mindset or other messages such as anti-drug messages to students through email communication

over the course of a year. Students assigned the growth mindset condition received emails from mentors about the malleability of the brain. The study's findings indicated that the students in the growth mindset treatment condition scored significantly higher on state reading achievement outcomes than students in the control group [$M = 84.38$, $SD = 7.7$), $t(65) = 2.07$, $p = .041$, $d = .52$].

A limitation of both Good and colleagues' (2003) study and Paunesku et al.'s (2015) study is that the sustained effects of mindset intervention on academic achievement were not measured. Blackwell and colleagues (2007) examined the long-term impact of mindset intervention on mathematics achievement. Researchers Blackwell et al. (2007) conducted a longitudinal quasi-experimental study to investigate the malleability of students' mindsets and whether interventions that develop growth mindsets contribute to lasting improvements in mathematics achievement. Ninety-one 7th-grade students participated in eight, short weekly workshops. Participants in the treatment group ($n = 48$) received instruction about the malleability of intelligence and how the brain changes with effort. Participants in the control group ($n = 43$) received math study skills training. Compared to the control group, participants in the treatment group reported increased levels of growth mindsets ($t = 3.57$, $p < .05$, $d = .66$). In addition to improved mathematics achievement over the two-year period ($ES = .27$), the treatment group also showed a significantly greater change in growth mindset than the control group ($F = 3.98$, $p < .05$). Students in the treatment group also demonstrated stronger growth mindsets than the control group after the intervention ($F = 4.50$, $p < .05$, $d = .47$). Overall, based on the similarity of Good et al.'s (2003) outcomes with the findings from Blackwell et al.'s (2007) study, the outcomes suggested that students' mindsets are malleable and can affect academic achievement.

using feedback to develop growth mindsets. Although there is a growing body of evidence that indicates individuals' beliefs about the malleability of intelligences correlates with motivation, behavior, and achievement (Aronson, Fried, & Good, 2002; Blackwell et al., 2007; Claro, Paunesku, & Dweck, 2016; Good et al., 2003; Hong et al., 1999; Schmidt et al., 2017), fewer studies have investigated how implicit beliefs about intelligence develops (Gunderson et al., 2013). Gunderson et al. (2013) posit that praise is a means through which children become aware of the beliefs and values of parents and educators. Praising children's effort can encourage them to adopt a growth mindset, generate strategies for improvement, and enjoy academic challenges (Gunderson et al., 2013). In contrast, praising children's inherent abilities can encourage them to adopt a fixed mindset, avoid challenging academic tasks, and believe the sources of their accomplishments arise from their fixed traits (Gunderson et al., 2013). Therefore, researchers hypothesize that the type of praise children receive is a variable that may influence children's intelligence mindset and related academic achievement outcomes (Kamins & Dweck, 1999; Mueller & Dweck, 1998).

Because teaching is a specialized type of social interaction between educators and student (Goswami, 2008), triadic reciprocal determinism, embedded within SCT (Bandura, 1986), provided a framework for understanding the role of praise in shaping students mindset beliefs and behaviors within the learning environment. Relative to the praise concept, Mueller and Dweck (1998) conducted a laboratory study with 128 ethnically and socioeconomically diverse fifth-grade students in which they received either process praise (e.g., "You must have worked hard at these problems." p. 36) or person praise (e.g., "You must be smart at these problems." p. 36) in response to completing a set of Raven's Progressive Matrices (Raven, 1998). The study's outcomes indicated that the children who received process praise (n = 41) were more likely to

endorse a growth mindset (M = 9.78, SD = 9.0), t(75) = 2.92, p = .005) compared to their peers who received person praise (n = 41) or those children in a control group (n=46) who received no praise feedback. Additionally, a chi-square analysis indicated significant differences in children's choice of learning goals depending on the type of praise, x^2 (2, N = 123) = 29.04, p < .001. Overall, 92% of children chose mastery learning goals after receiving process praise, and 67% chose performance goals after receiving person praise. Other laboratory studies examining the effects of praise on developing children's growth mindsets and the correlation with learning goals indicated similar findings to Mueller and Dweck's (1989) outcomes but show that as early as kindergarten (Kamins & Dweck, 1999) and preschool, children's beliefs about intelligence for specific tasks are susceptible to the effects of process and person praise (Cimpian, Arce, Markman, & Dweck, 2007; Corpus & Lepper, 2007; Mueller & Dweck, 1998; Zentall & Morris, 2010).

While laboratory studies indicated that the types of praise children receive correlates with individual differences in beliefs about intelligence and that these differences begin to emerge in the preschool years (Giles & Heyman, 2003; Kinlaw & Kurtz-Costes, 2007), the generalizability of the findings are limited due to the short-term laboratory nature of the studies. Gunderson and colleagues (2013) conducted a study to examine how types of parental praise occurring in children's natural settings might influence the development of children's intelligence beliefs. Observations and subsequent transcriptions of 53 Chicago area children and their parents engaging in parent-child interactions over a two year period provided the data for the types of parental praise utterances. Researchers coded the types of praise parents gave their children at ages 14, 26, and 38 months as either process praise, person praise or general praise. When the

children in the study were 7 to 8 years old, they completed a 5-point Likert-scale intelligence beliefs questionnaire adapted from Heyman and Dweck (1998).

The study's outcomes indicated that the amount of process praise parents provided during naturalistic interactions when their children were 14 to 38 months old was a significant predictor of children's beliefs that intelligence is malleable at ages 7-8 years, $r(51) = .35$, $p = .01$. Additionally, the link between parental use of process praise and children's later growth mindset beliefs did not correlate with the other independent variables examined including the overall amount of parental praise to their children, and parents' SES, but did correlate with gender as boys received more process praise than girls (Gunderson et al., 2013). While previous interventions focused on changing the mindset beliefs that have already formed among older students (Aronson et al., 2002; Blackwell et al., 2007; Good et al., 2003), Gunderson and colleagues (2013) suggested that interventions targeting the type of early praise provided such as praising children's efforts may be able to shape a growth mindset in the young child. Overall, examining mindset intervention research through a social cognitive theoretical lens highlights how the interaction between personal beliefs, learning behaviors, and environmental influences affected students' learning and academic achievement (Bandura, 1986).

Professional Development, Teacher Knowledge, and Self-Efficacy for Implementing Instructional Practices

In recent years, the role of psychological beliefs such as students' mindsets on academic performance and the role of teachers' instructional practices on psychological beliefs has gained attention from both researchers and practitioners (Farrington et al., 2012). However, the field of mindset interventions appears to be at an early stage in its evolution (Snipes et al., 2012) and therefore there is a gap between existing researcher knowledge and teachers' knowledge about

mindsets and its development (Farrington et al., 2012). Leveraging the body of research on mindsets to inform teacher practices is the next step in bridging research to practice (Farrington et al., 2012).

Empirical literature indicated that professional development (PD) training is an adult education approach that can provide learning opportunities for educators to enhance their knowledge and affect teaching self-efficacy beliefs impacting the use of new instructional practices (Borko, 2004; Cantrell & Hughes, 2008; Podhajski et al., 2009; Tschannen-Moran & McMaster, 2009). Specifically, within the domain of mindset information, research suggested that PD can provide educators with knowledge about how mindsets and learning goal approaches are underlying factors affecting student achievement (Boaler, 2013; Dweck, 2006). Researchers hypothesize that providing educators with a deep understanding of mindsets and training educators to use growth mindset instructional practices such as, process feedback can positively impact teachers' capacity to incorporate growth mindset instructional practices with students (Farrington et al., 2012; Rattan, Savani, Chugh, & Dweck, 2015; Strahan, Hansen, Meyer, Buchanan, & Doherty, 2017). The following sections examine PD literature that suggests best-practices in PD to increase teachers' acquisition of professional knowledge and improve self-efficacy beliefs for implementing new instructional practices.

Professional Development to Enhance Teacher Knowledge

In one model of teacher change, Guskey (1986) hypothesized that PD programs fail because they do not consider what motivates teachers to engage in PD and the process by which change occurs in teachers. Saderholm, Ronau, Rakes, Bush, and Mohr-Schroeder's (2017) research indicates PD that addresses "vision, contexts, and outcomes that undergird the desired effects of PD" (p. 791) facilitates change in teacher knowledge, beliefs, and practices.

Saderholm and colleagues (2017) developed a four-phase PD conceptual framework, PrimeD, about how teachers learn to guide developers of PD. The four phases include: (a) an overall design and development PD plan that defines the program's target outcomes and strategies to overcome the inherent challenges to reach the outcomes, (b) PD implementation including the structure of the PD and effective elements of PD, (c) formative and summative evaluation of PD design, development, and implementation, and (4) research, specifically what factors influenced the program's effect (Saderholm et al., 2017). Furthermore, Guskey (2002) indicates that evaluating PD using five critical levels can improve PD design, implementation, and outcomes. The five levels of PD evaluation include: (a) participants' reactions, (b) participants' learning, (c) organization support and change, (d) participants' use of new knowledge and skills, and (e) student learning outcomes (Guskey, 2002).

Recently, there is growing interest in identifying the PD features that have a meaningful effect on teacher learning (Desimone, 2009; Garet, Porter, Desimone, Birman, & Yoon, 2001; Saderholm et al., 2017; Wayne, Yoon, Cronen, & Garet, 2008). An emerging body of empirical literature suggests that PD best-practices to affect change in teacher knowledge and student outcomes include: (a) focus the PD on developing teachers' content knowledge and improving teachers' understanding of common student misconceptions; (b) provide opportunities for teachers to engage in active learning including practice implementing the new knowledge and skills under simulated or classroom conditions; (c) connect the PD experiences to teachers' particular contexts; and (d) provide PD that is more than 14 hours in duration (Chard, 2004; Borko, 2004; Garet et al., 2008; Saderholm et al., 2017; Wayne et al., 2008; Yoon, Duncan, Lee, Scarloss, & Shapley, 2007). In addition to the empirical research suggesting best-practices in PD to support teacher learning, other empirical studies examined the link between PD efforts to

improve teachers' self-efficacy for the new knowledge and skills with teachers' implementation of the new practices (Cantrell & Hughes, 2008; Tschannen-Moran & McMaster, 2009).

Professional Development to Enhance Teachers' Self-Efficacy

Researchers have suggested that a reason to attend to teachers' self-efficacy is because of the role it plays in teachers' implementation of new knowledge and instructional practices presented in PD (Tschannen-Moran & McMaster, 2009). In general, empirical studies examining teachers' implementation of new knowledge and instructional practices identify teachers' self-efficacy beliefs for the new practices as an underlying factor in determining whether the practices are used (Cantrell & Hughes, 2008; Tschannen-Moran & McMaster, 2009). According to Timperley and Phillips (2003), the change process in developing teacher knowledge and affecting self-efficacy beliefs to implement the new knowledge and practices is a reciprocal one in which the changes in one area can shape and build on the other. Additionally, empirical research suggests that PD formats that provide mastery learning experiences are effective in improving teachers' self-efficacy beliefs and implementation of new knowledge and instructional practices (Bandura, 1986; Cantrell & Hughes, 2008; Timperley & Phillips; 2003; Tschannen-Moran & McMaster, 2009).

In a quasi-experimental study, researchers Tschannen-Moran and McMaster (2009) examined how four different PD formats utilizing an additive approach that incorporated deeper sources of mastery learning experiences affected teachers' self-efficacy beliefs and implementation of a new reading strategy. The four PD formats were: (1) information; (2) information and modeling; (3) information, modeling, and practice; and (4) information, modeling, practice, and coaching. Study participants were 93 Kindergarten through second-grade teachers from nine socioeconomically diverse elementary schools. The participants

completed a survey of teachers' self-efficacy for reading instruction ($a = 0.91$), and a survey to measure the level of implementation of the reading strategy ($a = 0.99$) before and after participating in one of the PD formats. The study's outcomes indicated that the mastery learning experiences within the fourth PD format had the strongest effects on teachers' self-efficacy beliefs for the new reading strategy [$F(3,89) = 6.49$, $p < .01$] and for implementation of the strategy [$F(3,89) = 19.57$, $p < .01$]. Tschannen-Moran and McMaster's (2009) outcomes are similar to other research that indicates teachers' self-efficacy positively influences teachers' implementation of new instructional practices (Chard, 2004; JohnBull, Hardiman, & Rinne, 2003).

Summary of Intervention Literature

Examining the empirical intervention literature from a social cognitive theoretical framework (Bandura, 1986) sheds light on how self-efficacy and growth mindset beliefs may facilitate students' sense of control over their learning. Overall, interventions that teach students with LD to use self-regulatory reading strategies, memory strategies, and mastery learning goal approaches correlated with improvements in self-efficacy beliefs and reading achievement (Antoniou & Souvignier, 2007; Gaskill & Murphy, 2004; Nelson & Manset-Williamson, 2006; Schunk & Rice, 1989; Schunk & Rice, 1991). Similarly, empirical research examining the effect of interventions focused on developing students' growth mindset indicates that it is possible to change students' mindsets from fixed to growth (Aronson et al., 2002; Farrington et al., 2012) and that providing students process praise correlated with developing student's growth mindsets and use of mastery learning goal approaches (Farrington et al., 2012; Mueller & Dweck, 1998; Snipes et al., 2012). Resultantly, changing students' mindsets from fixed to growth is desirable

as growth mindsets can improve academic achievement (Blackwell et al., 2007; Paunesku et al., 2015).

In addition, researchers suggest that PD training is an adult educational approach that can facilitate teacher learning and affects teaching self-efficacy beliefs related to implementing new knowledge and instructional practices (Borko, 2004; Cantrell & Hughes, 2008; Podhajski et al., 2009; Tschannen-Moran & McMaster, 2009). PD can provide educators with knowledge about how mindsets and learning goal approaches are underlying factors affecting student achievement (Boaler, 2013; Dweck, 2006). Providing educators with an understanding of mindsets and mastery learning experiences relative to growth mindset instructional practices such as process feedback can positively impact teachers' capacity to incorporate growth mindset instructional practices with students (Rattan et al., 2015; Strahan et al., 2017).

Overview of Solution

The ETs in my professional context indicated a desire to learn about mindset information (Barbour, 2017). Based on this finding, in combination with the empirical evidence indicating the role of students' growth mindsets in academic achievement (Blackwell et al., 2007; Farrington et al., 2012), the intervention was to revise LDC's ET certification PD training to include mindset information. The PD activities associated with the intervention were embedded within an existing LDC certification training course and occurred within a week-long face-to-face practicum. Researchers examining effective PD indicate that the duration of PD correlates to the depth of teacher change (Garet et al., 2001; Yoon et al., 2007). Yoon et al.'s (2007) research on teacher PD indicated that sustained and content-focused PD of more than 14 hours had a significant, positive affect on teacher instructional practices and student achievement. The intervention provided active learning experiences that facilitated opportunities

for ETs to link theory to practice and demonstrate their developing knowledge and skills in simulated classroom contexts (Ryan, Toohey, & Hughes, 1996). Approximately 21 hours of the total forty-six hours of practicum PD training consisted of active learning experiences including observing and being observed, practicing implementing mindset knowledge and instructional practices under simulated educational therapy conditions with feedback, and leading small-group discussions about mindset information (Garet et al., 2001). The active learning experiences focused on developing ETs' ability to: (a) teach students about brain malleability, (b) communicate growth mindset messages embedded within the learning process, and (c) implement instructional practices such as process feedback to develop students' growth mindset (Yeager et al., 2016). Teachers' use of growth mindset messages that explicitly communicate the potential for students to become more intelligent can influence students' development of growth mindsets (Dweck, 2007).

The intended outcomes targeted by the intervention are ETs' content knowledge of mindset information, self-efficacy beliefs to implement instructional practices that focus on developing a growth mindset in students with LD, and practice the use of growth mindset instructional practices while providing reading instruction to students with LD. Research suggests that PD training that provides mastery learning experiences correlates with an increase in teachers' self-efficacy beliefs (Cantrell & Hughes, 2008) which subsequently enhances the likelihood that teachers implement the new knowledge and instructional practices (Timperley & Phillips, 2003). Based on the dynamic interaction between personal beliefs, behavioral, and environmental influences affecting students' learning and achievement within a social cognitive theoretical framework (Bandura, 1986), and growth mindset intervention research (Good et al., 2003; Paunesku et al., 2015), I hypothesize that the long-term impact associated with the

intervention is that students with LD participating in educational therapy will demonstrate growth mindsets and improved reading achievement. However, because the student outcomes are distal outcomes, the current research study focused on educator outcomes.

Conclusion

Currently, the Learning Development Center (LDC) trains educational therapists (ETs) to address cognitive factors rather than non-cognitive beliefs affecting the academic achievement of students with LD. However, LDC's current education intervention programs may not have a robust enough treatment effect to close the reading achievement gap of private school students with LD (Keafer, 2008). Recent student achievement data (N = 190) used to analyze the effectiveness of LDC's intervention programs on the reading achievement of third-grade through ninth-grade private school students with LD enrolled in LDC's intervention programs during the 2015-2016 school year indicated a small effect size for reading (d =. 39) (Gollery, 2017). In light of LDC's intervention program's current small reading achievement treatment effect size for students with LD and my needs assessment findings indicating ETs' need to become knowledgeable in mindset information, the proposed intervention is to revise LDC's ET certification PD training to incorporate mindset information. The treatment theory of change (Leviton & Lipsey, 2007) for the proposed intervention is that if LDC revises its ET certification PD training to incorporate mindset information, then ETs may have increased knowledge about the interaction between mindset beliefs, self-efficacy beliefs, learning goals, and academic achievement. If ETs have increased knowledge about how mindset beliefs affect learning goal approaches and academic achievement of students with LD, then ETs may increase their self-efficacy beliefs for using growth mindset practices during instruction. Additionally, the increased knowledge about mindset information and improved self-efficacy beliefs may increase

the likelihood that ETs will incorporate growth mindset information and instructional practices while teaching students with LD to read.

Chapter 4

Intervention Procedure and Program Evaluation Methodology

Contemporary neuroscience highlights the connections between psychological beliefs, learning, and achievement (Immordino-Yang & Damasio, 2007). A growth mindset, the belief that intelligence is malleable, positively affects students' learning goals and academic achievement (Blackwell et al., 2007; Paunesku et al., 2015). However, learning science research indicates that a fixed mindset, a person's belief that their intelligence is a static trait, is a psychological belief that students with disabilities can hold which negatively affects academic achievement (Baird et al., 2009; Paunesku et al., 2015). As the intervention literature demonstrates, teachers' instructional practices can shape students' mindsets, and their learning goal approaches (Dweck, 2000). Based upon research, changing students' mindsets from fixed mindsets to growth mindsets correlates with improvements in academic achievement outcomes (Blackwell et al., 2007; Good et al., 2003; Paunesku et al., 2015).

Purpose of Study

The purpose of this intervention was to increase educational therapists' (ETs) content knowledge of student mindset information, self-efficacy beliefs for using instructional practices that focus on developing students' growth mindset, and use of growth mindset instructional practices during reading instruction with students with LD. My needs assessment indicated ETs have a desire to learn more about mindset information and instructional practices that can facilitate a growth mindset in students with LD (Barbour, 2017). In response to this need, and in combination with the empirical evidence indicating the role of students' mindsets in academic achievement (Blackwell et al., 2007; Farrington et al., 2012), a revised educational therapist course (RETC) was created. The RETC was a professional development (PD) training for

educational therapists that incorporated mindset information to enhance ETs' knowledge, self-efficacy beliefs, and instructional practices related to a growth mindset. The PD activities associated with the RETC were embedded within an existing ET certification training course which incorporated four weeks of online learning modules followed by a week-long (e.g., five days) face-to-face practicum. The RETC's intervention components occurred during the practicum and comprised approximately 45% of the total practicum hours. The intervention design was informed and grounded in social cognitive theory and triadic reciprocal determinism (Bandura, 1986; Tschannen-Moran & McMaster, 2009). Also, the intervention design was based on best-practices in PD that can affect change in teacher knowledge, self-efficacy beliefs, instructional practices, and student outcomes (Borko, 2004; Garet et al., 2001; Saderholm et al., 2017; Tschannen-Moran & McMaster, 2009). Later sections of this dissertation provide a detailed explanation of the activities in the intervention.

Research Questions and Hypotheses

Table 12 indicates the research questions that were developed to guide this research study:

Table 12

Intervention Research Questions

Research Question	
Research Question 1	To what extent does participation in the RETC increase an ET's content knowledge of student mindset information?
Research Question 2	To what extent does participation in the RETC increase an ET's self-efficacy for using instructional practices that focus on developing a growth mindset in students with LD?
Research Question 3	To what extent does participation in the RETC increase an ET's use of growth mindset instructional practices during reading instruction with students with LD?
Research Question 4	What components of the RETC do ETs identify as useful or not useful in facilitating self-efficacy beliefs to implement instructional practices that focus on developing a growth mindset in students with LD?
Research Question 5	What observed variations in RETC implementation occur that affect the outcomes in ETs' self-efficacy for using instructional practices that focus on developing a growth mindset in students with LD?

From these intervention research questions, several research hypotheses were created.

Table 13

Intervention Hypotheses

Hypothesis	
H1	ETs in the RETC will improve their content knowledge of student mindset information.
H2	ETs' content knowledge of student mindset information is positively correlated with more positive self-efficacy beliefs for use of growth mindset instructional practices.
H3	ETs in the RETC will demonstrate improved self-efficacy beliefs for use of growth mindset instructional practices.
H4	ETs' self-efficacy beliefs for use of growth mindset instructional practices are positively correlated with ETs' use of growth mindset instructional practices.
H5	ETs who participate in the RETC will use growth mindset instructional practices while providing reading instruction to students with LD.

Intervention Research Design

The next sections describe the outcome evaluation research design and theory of treatment (ToT), as well as the process evaluation of the RETC intervention.

Outcome Evaluation

The overarching philosophical framework to guide the study's outcome evaluation research design was pragmatism (Creswell & Plano Clark, 2011). Pragmatism is an outcomes-oriented perspective in which researchers fit together insights provided by quantitative and qualitative research (Johnson & Onwuegbuzie, 2004). Accordingly, guided by the research questions (Onwuegbuzie & Leech, 2006), the research design for the intervention study was a sequential explanatory mixed-methods design [QUAN(+qual)], or two-phase model (Creswell & Plano Clark, 2011). Pre- and post-intervention quantitative and qualitative data were collected in the first phase. Additional qualitative data were collected in the second phase which were combined with the qualitative data from the first phase to help explain quantitative findings. An explanatory sequential mixed methods design allowed me to use qualitative data from course artifacts and interviews to help explain post-intervention quantitative outcomes (Creswell & Plano Clark, 2011). Furthermore, the explanatory sequential mixed-methods design facilitated an expansion, or more complete understanding of the phenomena than either a qualitative or quantitative approach alone would explain (Creswell & Plano Clark, 2011).

The explanatory sequential mixed-method design provided the basis for evaluation of the efficacy of the intervention to: (a) bring about intended proximal outcomes in ETs' content knowledge of students' mindset, ETs' self-efficacy beliefs and use of growth mindset instructional practices during reading instruction with students with LD; and (b) identify which components of the RETC intervention were useful or not useful in facilitating ETs' self-efficacy

beliefs to implement instructional practices that focus on developing a growth mindset in students with LD. Due to logistical constraints such as the Learning Development Center (LDC) scheduling courses in different locations around the United States, the intervention study was a treatment only study with one group receiving the RETC certification training with pre- and post-intervention observations of the four outcomes research questions (Shadish, Cook, & Campbell, 2002).

Theory of Treatment

A theory of treatment (ToT) described how an intervention fosters intended outcomes by highlighting the processes that facilitated the treatment mechanisms that produced the intended outcomes (Leviton & Lipsey, 2007). In this study, the intervention ToT aligned with social cognitive theory (SCT) and triadic reciprocal determinism (TDR) (Bandura, 1986), which were the theoretical and conceptual frameworks used throughout this dissertation. SCT and TRD provided a framework to understand how educators' personal beliefs can influence the learning environment by shaping instructional behaviors that affect student achievement outcomes (Bandura, 1986).

Interventions can be black boxes in which there are observable inputs and outputs, but the underlying processes to produce the outputs are not readily visible (Leviton & Lipsey, 2007). The ToT for the intervention was that the RETC provided PD training using active learning activities that increased ETs' content knowledge of students' mindsets and improved their self-efficacy beliefs, which impacted the use of new instructional practices (Desimone et al., 2002; Garet et al., 2008). Subsequently, as understood within the framework of TRD (Bandura, 1986) and indicated in the conceptual framework in Chapter 3, educators' personal characteristics (e.g., educators' knowledge and self-efficacy beliefs) affect behaviors (e.g., instructional practices)

which impact the learning environment and can positively affect student achievement (Cantrell & Hughes, 2008). However, because changes in student achievement outcomes were a theoretically intended outcome that may have occurred outside of the timeframe for the current intervention study, student outcomes cannot be inferred by the study. Therefore, the intervention study focused on proximal ET outcomes. Figure 3 provides a visual representation of the ToT using a diagram which depicts variables and their hypothesized relationships as indicated by arrows (Leviton & Lipsey, 2007).

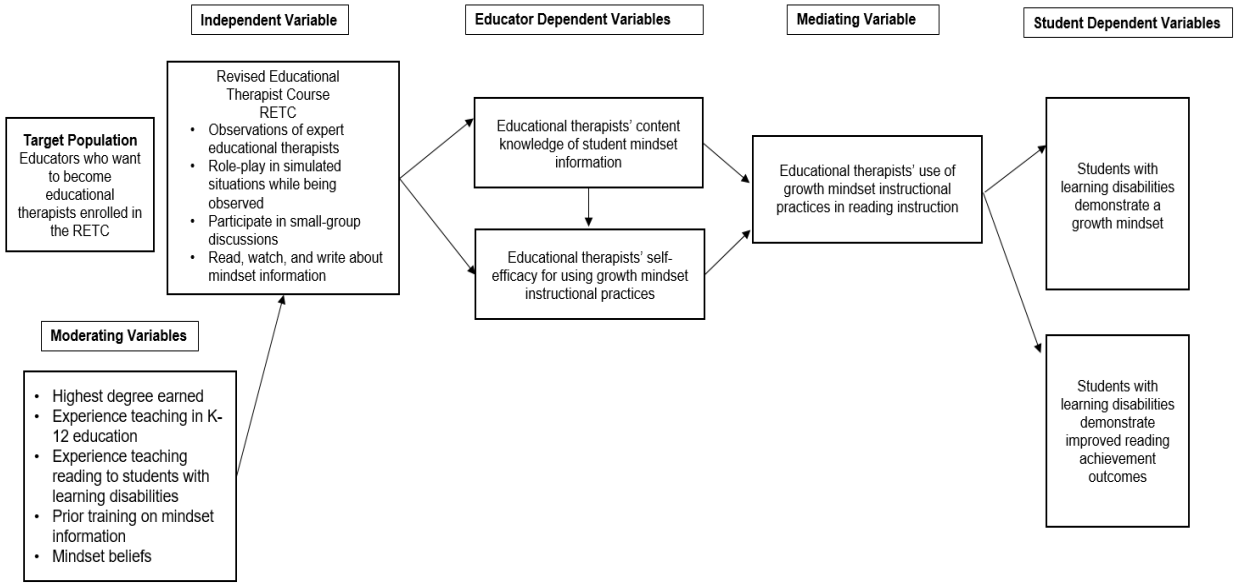

Figure 3. Theory of Treatment for the Revised Educational Therapy Course. Arrows represent hypothesized relationship between variables.

The diagram shown in Figure 3, denotes arrows between the independent variable, the RETC, and the ET dependent variables of knowledge of mindset information and self-efficacy for using instructional practices that focus on developing a growth mindset in students with LD to show the relationship between the variables. According to researchers (Benton, Li, & Brown, 2014; Tschannen-Moran & McMaster, 2009), the active learning (AL) activities in the RETC

such as observing and being observed, participating in group discussions, and writing activities can promote engagement in learning, build educator knowledge, and be a source of improved self-efficacy beliefs. The arrow between ETs' knowledge of mindset information and self-efficacy beliefs is also grounded in research on AL. PD that uses AL experiences to provide educators with knowledge of new information or instructional strategies, and persuasive claims of the knowledge or strategies' usefulness, can be a source of increases in self-efficacy (Tschannen-Moran & McMaster, 2009; Usher & Pajares, 2008). There are also arrows between the educator dependent variables and the mediating variable of ETs' use of growth mindset instructional practices. Research on the impact of self-efficacy beliefs and teachers' practices indicated that an increase in teachers' self-efficacy beliefs positively correlated with the use of the new instructional practices (Cantrell & Hughes, 2008). Based on the SCT empirical literature, an individual's past experiences are sources of self-efficacy (Bandura, 1986; Tschannen-Moran & McMaster, 2009; Usher & Pajares, 2008). Therefore, the anticipated moderating variables affecting the independent variable were (a) participants' highest degree earned, (b) experience teaching in K-12 education, (c) experience teaching reading to students with LD, and (d) prior training on mindset information. The ETs' mindset was another moderating variable that, based on the literature, was anticipated to covary with the use of instructional practices (Deemer, 2004; Gutshall, 2013; Leroy et al., 2007; Rattan et al., 2012; Watanabe, 2006).

The diagram (Figure 3) also showed a correlation between ETs' use of growth mindset instructional practices and the developing students' growth mindset and improved reading achievement, which was based on Paunesku and colleagues' (2015) and Yeager et al.'s (2016) research described in the intervention literature review. The claims for the ToT are temporal

order and contiguity (Leviton & Lipsey, 2007) as increases in educators' knowledge and self-efficacy beliefs precede increases in the use of improved instructional practices and eventually improvements in student achievement (Tschannen-Moran & McMaster, 2009).

Process Evaluation

Process evaluations are a means to investigate factors relating to how an intervention was both implemented and received, which can provide insights into the external and internal evaluation validity (Baranowski & Stables, 2000). According to Dusenbury, Brannigan, Falco, and Hansen (2003), process evaluations enable researchers to determine if a Type III error occur. A Type III error occurs when there is failure to implement the intervention as intended and causes the researcher to erroneously conclude that observed findings can be attributed to an intervention (Dusenbury et al., 2003). Implementation fidelity is the degree to which a program was implemented as designed (Dusenbury et al., 2003), and was the overarching construct that guided the process evaluation research question for the RETC intervention study: What observed variations in implementation of the RETC occur that affect the outcomes in ETs' self-efficacy for using instructional practices that focus on developing a growth mindset in students with LD? Two components of implementation fidelity that were examined in the implementation of the RETC intervention were dose and quality of delivery (Dusenbury et al., 2003). Dose is an aspect of implementation fidelity that indicates both the amount of intended program content delivered to participants and the amount of program content received by participants (Dusenbury et al., 2003). Dose aligns with the independent variable in the ToT diagram. Quality of delivery is a component of implementation fidelity that encompasses provider effectiveness in delivering program content (Dusenbury et al., 2003). Quality of delivery also aligns with the independent

variable in the ToT diagram as course instructors must effectively deliver the course content to produce the intended outcomes.

The following sections describe the participants, measures, intervention procedure, and data collection and analysis.

Method

Participant Recruitment

The participants in the sample are educators who provide reading interventions to private school elementary students with LD. The selection process for the RETC study was conducted in collaboration with the Learning Development Center (LDC) and followed a convenience sampling procedure that involved drawing samples that were easily accessible and only from those who desired to participate in the study (Teddlie & Yu, 2007). Participants were recruited for the RETC study from LDC's database of educators who registered for the LDC 2018 summer educational therapist course. To avoid participant coercion or undue influence, based on the position of authority I, as researcher, hold within LDC, the LDC sent an email recruitment letter on my behalf to potential participants who met the study's eligibility requirements. Participant eligibility criteria included: (a) holding at minimum a Bachelor's degree in education or a related field, and (b) having registered for the Virginia ET certification training course. Exclusionary participant criteria for the RETC included: (a) not holding at the minimum a Bachelor's degree, (b) enrolled in an ET course other than the one held in Virginia, and (c) having taken an educational therapist course previously.

In addition to the research questions guiding the research design, the research questions also determined the sample size and the sampling approach used (Onwuegbuzie & Leech, 2006). In accordance with the first three research questions, phase one of the intervention study was

primarily the quantitative component of the study. According to O'Leary (2014), when working with quantitative data and data analysis, basic statistical analyses require a minimum of approximately 30 respondents. Based on the logistical constraints surrounding the ET certification courses (e.g., LDC limiting the maximum number of course participants and holding courses in various geographical locations), the participation goal for the first phase of the intervention study was 34 participants, which is 100% of the anticipated enrollees in the Virginia 2018 summer ET course. The LDC provided the list of registered 2018 summer ET course participants, the sampling frame for the intervention participants.

Participants

Thirty out of the 34 participants enrolled in the course agreed to participate in the intervention study which is 94% of the population of those eligible to participate. Two of the participants were not eligible (e.g., one person did not have a Bachelor's degree, and the other had previously taken an educational therapist course). Two participants declined to participate in the study. The 30 RETC intervention study participants included 11 participants with a Bachelor's degree and 19 who held a Master's degree. Six participants had between 0-5 years of teaching experience in K-12 education, 10 participants had 6 -10 years of teaching experience in K-12 education, and 14 participants had 10+ years of teaching experience in K-12 education. Comparatively, 18 participants had between 0-5 years of experience teaching reading to students with LD, 8 participants had between 6-10 years, and 4 participants had 10+ years of experience. The study participants work in 10 different states. Although the majority of the participants (80%) work in states located in the Southeastern geographical region of the United States, four participants were from the Northeast, and two participants were from the Southwest geographical regions of the United States.

Although the sample encompassed 94% of the population enrolled in the RETC, the ability to make valid inferences about the generalizability of the study's findings was affected by the small sample size. Additionally, an intervention's small sample size can affect statistical power, the likelihood that a treatment effect is detectable if present (Lipsey, 1998). Low statistical power is a threat to statistical conclusion validity, which can increase the likelihood of a Type II error, incorrectly concluding that the independent and dependent variables did not co-vary (Shadish et al., 2002). As suggested by Shadish et al. (2002), to address the threat to statistical conclusion validity, I used data collection instruments that have high validity and reliability and implemented the treatment with fidelity.

While the 199 participants needed to reach sufficient power to detect the desired minimally detectable effect size of .2 in this intervention study was beyond attaining, other similar PD studies with statistical power have demonstrated minimally detectable effect sizes ranging from .19 to .59 for changes in teacher knowledge, self-efficacy beliefs, and instructional practices (Garet et al., 2008; Ross & Bruce, 2007). Garet et al.'s (2008) study with second-grade teachers ($N = 270$) examined the effects of 45 hours of PD delivered over eight days with six hours of instruction per day on content that aligned with the National Reading Panel's recommendation for reading instruction in grades K-6. The study's outcomes examining PD effectiveness indicated effect sizes ranging from .37 for changes in teachers' knowledge of phonemic awareness and .33 for changes in teachers' reading instructional practices. Ross and Bruce's (2007) study examined the effects of 14 hours of PD delivered over a 10-week period on sixth-grade mathematics teachers' ($N = 106$) teaching self-efficacy beliefs. The study's outcomes indicated effect sizes of .19 for self-efficacy for student engagement, .20 for self-efficacy for instructional strategies, and .59 for self-efficacy for classroom management. If the

RETC intervention study assumed the higher end of the minimally detectable effect size found in Ross and Bruce's (2007) and Garet et al.'s (2008) studies of .5, then the sample size required for the RETC was 34 participants.

Typical case sampling was the purposive sampling procedure used for the intervention's second phase involving qualitative observations of the observed outcome. Typical case sampling is "sampling to achieve comparability across different types of cases on a dimension of interest" (Teddlie & Yu, 2007). Based on the fourth research question, the dimension of interest in the intervention study was ETs' self-efficacy beliefs for using instructional practices in reading that focus on developing a growth mindset in students with LD. Purposive sampling within a sequential [QUAN(+qual)] two-phase analysis led to a depth of information from a smaller number of selected cases on the initial basis of the quantitative data (Collins, Onwuegbuzie, & Sutton, 2006). Furthermore, combining quantitative information with qualitative information about ETs' self-efficacy beliefs increased the validity of findings by triangulating data sources and reduced the mono-method bias threat to construct validity, which occurred when data about the operationalization of the construct occurred through one measurement (Shadish et al., 2002). Creswell (2013) suggests collecting extensive details about the dimensions of interest through interviewing a few individuals in case sampling and recommends no more than four to five cases. Following the post-intervention quantitative analyses, four participants were randomly selected for the sample in the second phase of the sequential [QUAN(+qual)] mixed-methods analysis. The sampling selection was used to facilitate comparisons on the ETs' self-efficacy beliefs dimension of interest. The sample for the second phase provided insights that addressed the research question, "What components of the RETC do ETs identify as useful or not useful in

facilitating self-efficacy beliefs to implement instructional practices in reading that focus on developing a growth mindset in students with LD?"

Tools (Instruments/Measures)

This section describes the data sources for the variables that were examined in the study including surveys, course artifacts, and observation and interview protocols. The study's variables, operational definitions, and type of variable are listed in Table 14.

Table 14

Variables, Operational Definition, and Type

Variables	Operational Definition	Type of Variable
Revised Educational Therapy Course (RETC)	A professional development training course for new educational therapists that incorporates mindset information that is designed to enhance educational therapists' content knowledge of students' mindsets, self-efficacy beliefs for using growth mindset instructional practices, and implementation of growth mindset instructional practices in reading instruction	Independent
Educational therapist's highest degree earned	The highest level degree an educational therapist has earned	Moderating
Educational therapist's years teaching in K-12 education	The number of years an educational therapist has had teaching in K-12 education	Moderating
Educational therapist's years teaching students with learning disabilities	The number of years an educational therapist has had teaching reading to students with LD	Moderating
Educational therapist's prior training on mindsets	Previous professional development related to increasing educators' awareness about students' mindsets and educators' capacity to change students' mindsets (Yettick, Lloyd, Harwin, Reimer, & Swanson, 2016)	Moderating
Educational therapist's mindset	The type of mindset, fixed or growth, that an educational therapist holds (Dweck, 2000)	Moderating
Educational therapist's content knowledge of student mindset information	Content information acquired from authoritative external sources that are factual (Trevethan, 2017) and provide theory and instructional strategies relative to mindsets (Dweck, 2000)	Dependent

Educational therapist's self-efficacy beliefs for using instructional practices that focus on developing a growth mindset in students with LD	Educational therapists' beliefs that they can effectively use growth mindset instructional practices (Bandura, 1986)	Dependent
Educational therapist's use of growth mindset instructional practices in instruction	Implementation of growth mindset instructional strategies during reading instruction (Yeager et al., 2016)	Mediating

Three instruments and two measures were used to collect the study's outcomes data: (a) Mindset Knowledge Inventory (See Appendix B), (b) Teachers' Sense of Efficacy Scale (TSES; Tschannen-Moran & Woolfolk Hoy, 2001; See Appendix C), (c) Reformed Teaching Observation Protocol (RTOP; Sawada et al., 2002; See Appendix D), (d) course artifacts including small-group discussion notes, reflective journal entries, and written responses to discussion questions, and (e) an Educational Therapist Interview Protocol (See Appendix E).

mindset knowledge inventory. The Mindset Knowledge Inventory (MKI) consisted of 25 researcher-constructed multiple-choice items that assessed ETs' content knowledge of mindset information and also included the three Likert-scale questions about mindset type from Dweck and Henderson's (1989) Theories of Intelligence Scale (TOI). The TOI was described in Chapter 3. To enhance content validity, the inventory questions were based on information acquired from an empirical literature review (Barry, Chaney, Piazza-Gardner, & Chavarria, 2014) of mindset information and growth mindset instructional practices (Baird et al., 2009; Blackwell et al., 2007; Dweck & Leggett, 1988; Farrington et al., 2012; Paunesku et al., 2015). Question items about mindset definitions, sources of mindsets, learning goals associated with mindsets, and the effects of mindsets on learning and achievement were used to assess ETs' content knowledge of mindset information. A sample content knowledge of mindset information

question is, “Which is a source for developing students’ mindset? Professors at Johns Hopkins School of Education and an expert in mindset information who works with researchers are cited in this dissertation (e.g., Paunesku et al., 2015) provided feedback about the face validity of the MKI. Collectively, the feedback suggested that MKI items appeared to assess the operationalized construct of mindset information. Subsequently, the MKI was tested and then retested two weeks later with the same nine people who are representative of the target population to determine test-retest reliability coefficient ($N = 9$, $r = .68$, $p < .05$, two-tailed, $SD = 7.6$, $SD = 6.8$).

I conducted cognitive interviews with two of the respondents to determine if the respondents understood the questions the way they were intended (Schutt, 2015). I asked the respondents to describe what the test was asking them and to describe what they thought about when they answered a question. The respondents indicated an understanding of the test questions in a similar way to how the questions were intended. For example, Respondent 2 indicated that the way the test question was worded (e.g., “In general _____ learning goals are associated with fixed mindsets.”) suggests that the type of mindset and the learning goal are associated. Respondent 2 indicated that what they were thinking when answering the question was a spontaneous comparison between the types of learning goals held by a student with a fixed mindset compared to a student holding a growth mindset. The respondent proceeded to say that “the student holding a fixed mindset would be focused on getting a specific grade and performing compared to a student holding a growth mindset who would be learning content to master it out of intrinsic motivation or interest in the topic” (Respondent 2, Cognitive Interview). Respondents indicated that the question, “Teachers’ mindsets affect their _____.” had answers choices (e.g., classroom management strategies and instructional approaches) that

seemed to overlap creating some ambiguity. Subsequently, the answer choices were changed to better differentiate the response options for the pre- and post-intervention administration of the MKI.

teachers' sense of efficacy scale. The Teachers' Sense of Efficacy Scale (TSES; Tschannen-Moran & Woolfolk Hoy, 2001) is a 24-item Likert-scale survey that measures teachers' perceived self-efficacy beliefs. Researchers Tschannen-Moran and Woolfolk Hoy (2001) created and validated the TSES with factor analysis (Chang & Engelhard, 2016). The TSES is composed of three subscales: (a) Efficacy in Student Engagement, (b) Efficacy in Instructional Strategies, and (C) Efficacy in Classroom Management. Each of the scales has internal reliability ranging from .87 to .91. For the purposes of this study, the eight-item Efficacy in Student Engagement subscale (a =.87, M = 7.3, SD = 1.1) and the eight-item Efficacy in Instructional Strategies subscale (a =.91, M = 7.3, SD = 1.1) was used. Because Bandura (2006) suggested that self-efficacy scales should be specifically related to the domain of functioning, participants responded to the Efficacy in Instructional Strategies scale in two different iterations for a total of 24 survey items. The second time participants responded to the Efficacy in Instructional Strategies scale items the directions asked participants to consider implementing growth mindset instructional strategies when responding to the items. Participants responded to the TSES items on a nine-category rating scale including five anchors: 1 = Not at all, 3 = Very Little, 5 = Some Degree, 7 = Quite a Bit, 9 = A great deal. Table 15 indicates the TSES subscale, the items on each scale, and a sample question.

Table 15

Teachers' Sense of Efficacy Survey Subscales, Items, and Sample Questions

Scales/Subscales	Items	Sample Questions
Efficacy in Instructional Strategies	5, 7, 8, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24	To what extent can you provide an alternative explanation or example when students are confused?
Efficacy in Student Engagement	1, 2, 3, 4, 6, 9, 10, 14	How much can you do to get students to believe they can do well in school work?

reformed teaching observation protocol. The Reformed Teaching Observation Protocol (RTOP) is a 25-item Likert-scale observation instrument that provides a standardized method for determining the extent to which K-20 educators use reformed teaching (Sawada et al., 2002). The RTOP was created for use with teachers of mathematics and science, and contains five subscales: (a) Lesson Design and Implementation, (b) Content - Propositional Pedagogic Knowledge, (c) Content- Procedural Pedagogic Knowledge, (d) Classroom Culture – Communication Interactions, and (e) Classroom Culture – Student/Teacher Relationships. The RTOP is both a reliable and valid instrument with construct validity ranging from .76 R^2 to .97 R^2, interrater reliability scores ranging from .67 to .94 and an overall Cronbach's Alpha of 0.97 (Sawada et al., 2002).

Reformed teaching is grounded in constructivism and inquiry-based methods that facilitate a student-centered learning environment rather than a teacher-centered, lecture-driven learning environment (Sawada et al., 2002). According to Sawada and colleagues (2002), teachers using reformed teaching practices use discourse to elicit students' ideas and predictions, engage students in reflection about their learning, and foster active learning to develop students' critical thinking skills. Constructivist learning theorists posit that knowledge is actively built by the learner through interactions between the learner and the environment and that the meaning of

knowledge is individually constructed from personal experiences (Ernest, 2010; Ertmer & Newby, 1993; von Glassersfeld, 2005). Table 16 indicates the RTOP subscale, corresponding item numbers, and a sample question. To determine if the RTOP is an instrument that can be used in the intervention study, the other RETC course instructor and I piloted the use of the RTOP with three video-recorded observations of ETs teaching reading skills (e.g., decoding, phonics, and vocabulary) to students with LD. Each person observed the ETs for approximately one hour and independently scored the observation using the RTOP and achieved an inter-rater reliability of .8 which is within the established high inter-rater reliability range of .8 to .9 (Sawada et al., 2002).

Table 16

Reformed Teaching Observation Protocol Subscales, Items, and Sample Questions

Subscales	Items	Sample Questions
Lesson Plan and Implementation	1, 2, 3, 4, 5	The focus and direction of the lesson were often determined by ideas originating with students.
Content – Propositional Pedagogic Knowledge	6, 7, 8, 9, 10	The teacher had a solid grasp of the subject matter content inherent in the lesson.
Content – Procedural Knowledge	11, 12, 13, 14, 15	Students were reflective about their learning.
Classroom Culture – Communication Interactions	16, 17, 18, 19, 20	Student questions and comments often determined the focus and direction of classroom discourse.
Student/Teacher Relationships	21, 22, 23, 24, 25	Active participation of students was encouraged and valued.

course artifacts. Two types of course artifacts: small-group discussion notes and individual written reflection responses to discussion questions given as homework also provided insights into ETs' content knowledge of student mindset information and their ability to connect

multiple concepts about mindset information learned from the readings, presentations, and personal experiences (Im & Lee, 2003).

educational therapist semi-structured interview protocol. The interview protocol (See Appendix E) included one demographic question, three questions about general teaching experience, two questions about prior training on students' mindsets, four questions about the impact of the RETC course on ETs' self-efficacy beliefs, and three questions about ETs' projected use of growth mindset instructional practices. The two constructs targeted for exploration within this interview were: (a) what components of the RETC do ETs describe as useful or not useful in facilitating their self-efficacy beliefs to implement growth mindset instructional practices, and (b) how the growth mindset instructional strategies will be integrated within instruction. Sample questions include: "Which course learning activities do you think worked well or not well in developing your belief in your ability to use growth mindset instructional practices to develop students' growth mindset?" and "How do you envision integrating growth mindset instructional practices during reading instruction to develop students' growth mindset?"

The following sections describe the instruments used to collect process evaluation data. Two instruments were used to collect the study's process evaluation data including instructor activity logs and the IDEA Student Ratings of Instruction Diagnostic Feedback $_{2016}$ Instrument (IDEA SRI-DF$_{2016}$, Li, Benton, Brown, Sullivan, & Ryalls, 2016).

instructor and participant activity logs. Instructor activity logs are an electronic record of the day, type, and length of AL activities course instructors provided during the RETC. Participants used a paper-based log to self-report on participation in AL activities as not all participants had access to a computer during the practicum week. Activity logs provided a

quantitative measure of dose delivered, an aspect of implementation fidelity (Dusenbury et al., 2003). A sample participant log is in Appendix F.

IDEA student ratings of instruction diagnostic feedback $_{2016}$ instrument. The IDEA Diagnostic Feedback $_{2016}$ Instrument (IDEA DF$_{2016}$; Li et al., 2016) is a 40-item Likert-scale survey that measures postsecondary students' perceptions about the effectiveness of their instructor and the course to accomplish learning outcomes. Thirty-two of the 40 survey items assess two areas, teaching methods and students' progress on course learning objectives. A sample teaching methods survey item is, "Encouraged students to reflect on and evaluate what they have learned." A sample progress on learning objectives survey item is, "Gaining a basic understanding of the subject (e.g., factual knowledge, methods, principles, generalizations, theories)." There are 19 items related to teaching methods (a = .98) and 13 items related to progress on course learning objectives (a = .95). The remaining eight survey items measure student and course characteristics and an overall summary of the instructor and course. Table 17 indicates the IDEA DF $_{2016}$ (Li et al., 2016) subscales, number of survey items, and rating scales used. Appendix G contains the full survey.

Table 17

IDEA Diagnostic Feedback 2016 Instrument Subscales, Survey Items, and Rating Scale

Subscale	Number of Survey Items	Rating Scale
Teaching Methods	19	1 = Hardly Ever, 2 = Occasionally, 3 = Sometimes, 4 = Frequently, 5 = Almost Always
Learning Objectives	13	1 = No Apparent Progress, 2 = Slight Progress, 3 = Moderate Progress, 4 = Substantial Progress, 5 = Exceptional Progress
Course Characteristics	2	1 = Much Less than Most Courses, 2 = Less than Most Courses, 3 = About Average, 4 = More than Most Courses, 5 = Much More than Most Courses
Student Characteristics	4	1 = Definitely False, 2 = More False than True, 3 = In Between, 4 = More True than False, 5 = Definitely True
Overall Summary	2	1 = Definitely False, 2 = More False than True, 3 = In Between, 4 = More True than False, 5 = Definitely True

Procedure

The following section provides an overview of the RETC intervention, intervention components, timeline, data collection, and data analysis.

RETC Intervention

The ET training course is an annually held professional development (PD) certification training course that is required to fulfill the Learning Development Center's (LDC) certification requirements. The ET training is designed for educators who want to become certified ETs who provide educational therapy, a one-on-one cognitive and academic intervention, to private school students with LD. During the 116 hour ET certification course, educators review psychometric assessments including cognitive and achievement tests, and learn to implement ten different educational therapy techniques. Five educational therapy techniques focus on developing second-grade through fifth-grade elementary students' reading skills: (a) Blue Book, (b) Moveable Alphabet, (c) Let's Read, (d) Buzzer, and (e) Dictation and Copy (NILD, 2017). Each

of the educational therapy techniques provides systematic and explicit instruction that develops students' reading skills by enhancing students' successful acquisition of one or more of the five critical literacy components required for reading (e.g., phonemic awareness, phonics, fluency, vocabulary, and reading comprehension) identified by the National Reading Panel (2000). A comprehensive description of the research-informed five educational therapy techniques taught ETs in LDC's certification training course that develop students' reading skills is in Appendix H (Table H1).

The RETC differed from the existing LDC's ET certification training course as the RETC incorporated mindset information into the course content and learning activities. While both the existing ET course and the RETC were a combination of 4 weeks of online professional development training followed by a week-long face-to-face practicum, the mindset content and related learning activities were only implemented during the practicum week of the RETC. Participants attended the practicum Monday through Thursday from 8:00 am to 5:00 pm and on Friday from 8:00 am to 12:00 pm. Approximately 45% of the total practicum hours encompassed learning activities related to mindset information.

The RETC was taught by two expert ET instructors who hold graduate degrees in education and are professionally certified as ETs through the LDC and as dyslexia specialists through the International Dyslexia Association. While one RETC instructor was facilitating the learning activity, the other instructor was present in the training room helping to answer participant questions. The RETC instructors, one of them being myself, each have more than ten years of experience teaching the ET certification courses or follow-up ET certification training, and teaching students with LD or providing educational therapy to students with LD. Both RETC instructors have experience providing educator PD workshops and webinars on student

mindset information and instructional practices to develop students' growth mindset. I was the primary developer and provider of the RETC mindset content instruction and learning activities. However, to enhance implementation fidelity, the other RETC instructor and I collaborated on the schedule of activities, piloted the use of RTOP (Sawada et al., 2002) with video-observations of three ETs to ensure calibration of the different observations. We spent four hours reviewing the content and the goals of the RETC mindset material and learning activities.

During the RETC practicum week, course instructors facilitated 21 hours of active learning (AL) activities that: (a) build ETs' content knowledge of student mindset information, (b) improve ETs' self-efficacy beliefs to implement instructional practices that focus on developing a growth mindset in students with LD, and (c) practice the use of growth mindset instructional practices in reading instruction while implementing the five reading-focused educational therapy techniques. Active learning is broadly defined as any instructional method that engages students in the learning process (Prince, 2004). In particular, AL involves having learners engage with the material being learned (Bonwell & Eison, 1991; Darling-Hammond et al., 2017) through activities that involve doing, writing, reading, thinking critically, and discussing (Benton et al., 2014). Active learning aligns with the human agency component of SCT (Bandura, 1986). Active learning approaches encourage learners to be active participants in their own learning experience, thus providing individuals control over their own learning (Kozlowski & Bell, 2009). SCT views human agency as operating within TRD, wherein behavior, personal factors, and the environment interact and influence the course of action an individual chooses to pursue (Bandura, 1986). Furthermore, AL is also in alignment with the self-efficacy aspect of SCT as AL activities can provide opportunities for ETs to experience sources of self-efficacy (Tschannen-Moran & McMaster, 2009). The anticipated sources of self-

efficacy that correspond with the different AL opportunities are described in detail in the intervention component section.

The following section describes the growth mindset instructional practices taught, modeled, and practiced during the RETC.

Growth Mindset Instructional Practices

For the purposes of this study, growth mindset instructional practices are defined as instructional strategies ETs use to help students develop a growth mindset. The five growth mindset instructional practices that were taught, modeled, and practiced during the RETC are: (a) provide information about brain malleability, (b) elicit student-generated personal examples, (c) provide process-oriented feedback, (d) elicit student explanations of growth mindset benefits, and (e) guide students to try different learning strategies. Table 18 indicates the type of growth mindset instructional strategy and an example of the strategy.

Table 18

Growth Mindset Instructional Practices and Example of the Practice

Growth Mindset Instructional Practice	Example of the Practice
Provide information about brain malleability	Provide students with information on brain plasticity and teaching students new neural connections are established through learning and practice (Blackwell et al., 2007)
Elicit student-generated personal examples	Students engage in "saying-is-believing" discussions where students explain why growth mindset information is relevant to their own lives within the particular learning situation (Yeager et al., 2016)
Provide process-oriented feedback	Provide students feedback that focuses on effort or use of strategies (e.g., tell students, "You found a good way to do it; can you think of other ways to do it that would also work?") (Kamins & Dweck, 1999)
Elicit student explanations of growth mindset benefits	Students describe the ways that a growth mindset influences personal learning and performance when facing challenging learning tasks or mistakes (Strahan et al., 2017)
Guide students to try different learning strategies	When students struggle to learn a concept or skill, the ET encourages the use of error correction, self-advocacy, perseverance, and increased effort (Strahan et al., 2017)

provide information about brain malleability. Providing information about the malleability of the brain involved teaching students that learning changes the brain by forming new neural connections and that students are in charge of this change process (Blackwell et al., 2007). Providing students information about brain malleability helped students to adopt a growth mindset (Blackwell et al., 2007).

elicit student-generated personal examples. Eliciting student-generated personal examples was a growth mindset instructional strategy that used indirect versus direct framing of mindset messages. Direct framing of growth mindset information involves telling students why and how growth mindset information will help them learn and improve their intelligence (Yeager et al., 2016). Indirect framing of mindset messages involves having students engage in "saying-is-believing" discussions where students take new information and explain why it is relevant to

their own lives within the particular learning situation and how they would communicate the information to someone else (Yeager et al., 2016). Saying-is-believing discussions can be an effective approach to make the information (in this context, information about a growth mindset) self-relevant, which can make the information easier to recall (Bower & Gilligan, 1979).

provide process-oriented feedback. Providing process-oriented feedback is a growth mindset instructional strategy that involves explicitly emphasizing students' effort, use of strategies, and actions (e.g., praising the student for finding their mistake) for learning or accomplishing the task (Gunderson et al., 2013). Students exposed to process-oriented feedback are more likely to persevere in challenging learning tasks or following a failure and use strategies to find constructive solutions (Hardiman, 2012; Kamins & Dweck, 1999; Mueller & Dweck, 1988).

elicit student explanations of growth mindset benefits. Eliciting student explanations of growth mindset benefits involved teaching students how to frame challenging tasks and mistakes within the framework of a growth mindset (Yeager et al., 2016). By labeling and explaining the benefits of a growth mindset, students develop adaptive responses to challenges and mistakes (Moser, Schroder, Heeter, Moran, & Lee, 2011) as students develop the ability to articulate that learning challenges and mistakes facilitate effort, use of strategies, and accomplishment (Strahan et al., 2017). As students learn to ask themselves which of their mistakes taught them something, students begin to describe mistakes and setbacks as opportunities to learn (Dweck, 2000; Yeager et al., 2016).

guide students to try different learning strategies. Guiding students to try different learning strategies is a growth mindset instructional strategy that involves educators providing constructive feedback to students to use alternative strategies such as error correction, self-

advocacy, perseverance, and increased effort when learning a concept or skill that is challenging (Strahan et al., 2017). Teaching students to try different learning strategies facilitates perseverance and resilience in the face of setbacks, which are adaptive cognitive and behavioral aspects of growth mindset beliefs (Rattan et al., 2015).

RETC AL Intervention Components

This section will describe the RETC AL intervention components: (a) observations of expert ETs, (b) role-playing in simulated situations with observation, (c) participation in small group discussions, and (d) reading, watching, and writing about mindset information. Table 19 indicates the RETC AL activity, practicum day the activity occurs, duration of the AL activity, AL activity description, and an example.

Table 19

RETC AL Activities, Practicum Day, Total Duration, Description, and Examples

Activity	Practicum Days	Total Duration	Description	Example
Observation of expert ETs	Monday and Wednesday	Three hours	An activity in which participants observe videos of an expert ET providing educational therapy to a student with LD using growth mindset practices	Participants write examples of an expert ETs' use of growth mindset instructional practices (e.g., providing students process-oriented feedback)
	Tuesday, Wednesday, and Friday	Two hours	Activities in which participants observe an expert ET providing reading-focused educational therapy techniques to a participant role playing a student with LD	Participants write examples of an expert ETs' use of growth mindset instructional practices while implementing reading-focused educational therapy techniques (e.g., during Blue Book, ETs explicitly teach students that learning changes the brain by forming new neural connections)
Role-play in simulated situations while being observed	Monday through Wednesday and Friday	Three hours	Activities in which participants practice applying growth mindset instructional practices while role-playing providing reading instruction to students with LD who exhibit difficulty with one or more of the five components of literacy identified by the National Reading Panel (NICCHD, 2000) (e.g., phonemic awareness, phonics, fluency, vocabulary, and reading comprehension)	Participants work in pairs for 15-20 minute segments role-playing the ET and the student with LD to practice implementing growth mindset instructional practices (e.g., guiding students to try different learning strategies when the student struggles to learn syllable types)

	Thursday	Two hours	An activity in which participants plan and implement an educational therapy session that incorporates growth mindset instructional practices	Participants demonstrate a 40-minute educational therapy session in a simulated situation with another participant playing the role of a student with LD who has reading difficulties while the course instructor observes the demonstration and provides verbal and feedback to the ET immediately following the demonstration
Participate in small group discussions	Monday through Friday	Four hours	Activities in which small groups of three to five participants engage in discourse for 20 – 40 minutes to respond to course instructors' discussion prompts that require ETs to summarize, ask questions, and elaborate on key growth mindset concepts and discuss growth mindset instructional practices	What is process-oriented feedback? How might you provide process-oriented feedback when students lack the specific reading skills needing improvement?
Read, watch, and write about mindset information	Monday through Friday	Seven hours	Activities in which participants read empirical literature, engage in PowerPoint presentations about mindset theory and intervention research, and reflect on video presentations (e.g., TED Talks) on growth mindset and write personal responses to the discussion prompts	Participants watch Growing your mind to be unstoppable (Romero, 2015) and write a 250 word response to the discussion prompt "Reflect on what was presented by Dr. Romero about growth mindsets? How can you change students' fixed mindset to growth mindset?

observations of expert ETs. An expert ET is an LDC professionally certified ET with three or more years' experience teaching reading to students with LD during educational therapy sessions. For the intervention, both course instructors were LDC professionally certified ETs. The participants observed the course instructors demonstrate the use growth mindset instructional practices while conducting an educational therapy session with a student with LD. During the session, the course instructor: (a) intentionally discussed the malleability of intelligence with the student within the learning activities (Blackwell et al., 2007), (b) used process-oriented feedback (Mueller & Dweck, 1988) when the student encountered a learning challenge (e.g., "You worked hard and let's try another strategy"), and (c) implemented growth mindset instructional strategies during reading instruction (e.g., elicit a personal example from the student about a time when the student did not know the eight ways to spell the long /a/ sound, but they learned the phonetic patterns using a learning strategy and with practice improved their reading ability). While observing the course instructors, participants wrote examples of the expert ET's use of growth mindset instructional practices.

Following the completion of the observation, participants discussed their written observations in a whole-group discussion facilitated by the course instructors. Throughout the practicum week, for a total of two hours, participants also observed the course instructors implementing the five reading-focused educational therapy techniques. To facilitate ET engagement during the observations, ETs wrote examples of growth mindset feedback and instructional practices. This writing exercise provided a measure of implementation fidelity (e.g., dose received) and participants also filled out their participant log that they observed expert ETs implementing growth mindset instructional practices.

The goals of observing expert ETs were: (a) that participants increase their knowledge about how to implement growth mindset instructional practices while providing reading instruction to students with LD and (b) that participants increase their self-efficacy beliefs about their ability to implement growth mindset instructional practices with students with LD. According to SCT, observing an expert educator, who serves as a model, implement instructional practices provides a vicarious experience that can be a source of self-efficacy for the participant (Usher & Pajares, 2008). Within the framework of SCT, observations of competent models can provide a standard for the instructional practices and can help the observer set goals for his or her own instructional practices (Tschannen-Moran & McMaster, 2009). Furthermore, when an observer watches a successful demonstration of the instructional practices being taught by someone they perceive as having similar attributes (e.g., having received the ET certification training course), the observer is more likely to view the instructional practices as an obtainable skill set (Tschannen-Moran & McMaster, 2009).

role-play in simulated situations while being observed. ETs worked in pairs for 15-20 minute segments Monday through Wednesday and on Friday, role-playing the ET and the student with LD. The purpose of the role-play exercises was to practice implementing growth mindset instructional practices while providing reading instruction that participants observed the course instructors implementing during the observation AL activities. During role-play exercises, both the course instructor and the participant partner gave feedback to the participant role-playing the ET. On Thursday, ETs planned and demonstrated a 45-minute educational therapy session for the course instructor in a simulated situation with another participant playing the role of a student with LD who has reading difficulties. Immediately following the demonstration, the course instructor provided the ET with verbal and written feedback. The five

hours that RETC participants engaged in role-playing in simulated situations while being observed by peers and course instructors provided AL activities for ETs to practice implementing growth mindset instructional practices. As previously indicated, the use of AL activities enabled ETs to engage in learning activities and apply the mindset material being learned (Prince, 2004).

One of the goals of the AL role-playing opportunities was that ETs increase their self-efficacy beliefs for implementing growth mindset instructional practices. Consistent with SCT (Bandura, 1986), a powerful source of self-efficacy beliefs is an individual's interpretation of their own previous attainments, or mastery experiences (Usher & Pajares, 2008). Following completion of a task, individuals interpret and evaluate the obtained results, and when they believe that their efforts indicate successful mastery, their confidence to accomplish the tasks again is raised (Usher & Pajares, 2008). A second goal of the AL role-playing activities was that ETs increase their use of growth mindset instructional practices during reading instruction with students with LD. Professional development that provides educators with the opportunity for active practice that leads to mastery experiences can increase educators' use of new instructional practices (Bandura, 1986; Cantrell & Hughes, 2008; Garet et al., 2001; Tschannen-Moran & McMaster, 2009).

participate in small-group discussions. Throughout the practicum week, ETs were placed in or were coached to form small groups with three to five different participants who engaged in discourse to respond to the course instructors' discussion prompts. ETs were asked to engage in discourse to summarize, pose questions, and elaborate on key growth mindset concepts and growth mindset instructional practices. Small group discussion activities concluded with ETs leading a five-minute presentation to the class summarizing each group's

discourse and providing the course instructors with the written bullets point notes that highlight their group's discussion. A sample discussion prompt is, "How does a student's mindset affect academic achievement?" The four hours in which ETs are involved with AL small group discussions provided opportunities for participants to share and reflect on growth mindset concepts and their experiences implementing growth mindset instructional practices during the role-playing AL opportunities.

The goals of the AL small group discussion opportunities were that ETs increase their knowledge of mindset content and that the discourse provided opportunities for ETs to experience verbal persuasion. Verbal persuasion involves verbal input from others, including colleagues and course instructors that provide content knowledge or knowledge of a new instructional strategy, as well as persuasive claims about the usefulness of the knowledge or instructional practices (Tschannen-Moran & McMaster, 2009). According to SCT, verbal persuasion can be another source of self-efficacy beliefs that impact the use of new instructional practices (Usher & Pajares, 2008).

read, watch and write about mindset information. ETs read four peer-reviewed empirical journal articles and watched two PowerPoint presentations on mindset theory and intervention research. To demonstrate content knowledge of student mindset information, participants responded to four writing prompts that asked the ETs to connect concepts about mindset information from the journal articles, PowerPoint presentations, and personal experiences in approximately 250-word responses. Additionally, ETs watched four video presentations on mindsets and were asked to write two reflection responses to the videos in approximately 250 words each to demonstrate content knowledge of student mindset information and indicate how they would use growth mindset instructional practices in learning situations

with students with LD. The seven hours of AL experiences in which ETs read empirical journal articles, watched presentations, and wrote about mindset information provided opportunities for ETs to enhance their content knowledge about mindset theory and learning goal approaches associated with mindsets and mindset intervention research and connect the information to their context. Approximately four of the seven hours of read, watch, and write AL encompassed writing the reflection responses that occurred outside of the practicum day hours. Table 20 lists the journal articles, PowerPoint presentations, video presentations, and writing prompts used in the AL reading, watching, and writing about mindset information component of the RETC.

Table 20

Journal Articles, PowerPoints, Video, and Writing Prompts

Journal Articles, PowerPoint Presentations, and Videos	Writing Prompts
A social-cognitive approach to motivation and personality (Dweck & Leggett, 1988)	Describe the two theories of intelligence and the relationship between theories of intelligence and learning goals. Provide an example of a student who used performance or mastery learning goals and how the learning goal impacted the students' use of strategies or effort.
Parent praise to 1– 3-year olds predicts children's motivational frameworks five years later (Gunderson et al., 2013)	Summarize the review of the literature about the effect of praise on children's beliefs about the malleability of traits and subsequently how children respond to challenging tasks. Based on the study conducted by Gunderson et al. (2013), what would you share with a peer about the positive impact of process-oriented praise?
Cognitive self-regulation in youth with and without learning disabilities: Academic self-efficacy, theories of intelligence, learning vs. performance goal preferences, and effort attributions (Baird et al., 2009)	How do students with learning disabilities differ from their peers without learning disabilities relative to self-efficacy, theories of intelligence, and learning goal preferences? Explain how you would use growth mindset instructional practices with a student with learning disabilities to facilitate approaches to learning that would be different from their peers.
Implicit theories of intelligence predict achievement across adolescent transition: A longitudinal study and an intervention (Blackwell et al., 2007)	Describe the impact of students' mindsets on motivational patterns (e.g., learning goals, beliefs about effort, and response to failure) and academic achievement. Incorporate examples from your own experiences with students' mindset in your response.

PowerPoint: An overview of mindset theory and growth mindset interventions	
PowerPoint: Developing ETs' knowledge and use of growth mindset instructional practices	
Video: The power of believing you can improve (TEDxNorrkoping, 2014)	
Video: Growing your mind to be unstoppable (Romero, 2015)	Reflect on what was presented by Dr. Romero about growth mindsets. How can we change students' fixed mindset to growth mindset?
Video: Global education symposium: A conversation about growth mindset (Yeager, 2017)	Reflect on how growth mindsets matter for opportunities to learn, confronting challenges, and responses to setbacks. How would you respond to one of your students who received a low grade using a growth mindset framework?
Video: The role of noncognitive factors in shaping school performance (UChicago UEI, 2017)	

The goal of the AL activities involving reading, watching, and writing about mindset information was that ETs increase their knowledge of mindset content. According to Garet et al. (2001), AL activities in which participants produce written work can facilitate a deeper exploration of the substantive issues introduced in the readings and presentations. Furthermore, PD programs that provide educators with opportunities to think about and discuss the content and new practices either in verbal or written form can facilitate increases in knowledge and skills and changes in teacher practices (Blank, de las Alas, & Smith, 2007). Table 21 lists the four AL activities and their alignment with the research questions.

Table 21

RETC AL Activity and Research Question

AL Activity	Research Question
Observations of expert ETs	Research Question 2
Role-play in simulated situations while being observed	Research Question 2 and Research Question 3
Participate in small-group discussion	Research Question 1
Read, watch, and write about mindset information	
Journal article – Dweck & Leggett (1988)	Research Question 1
Journal article – Gunderson et al. (2013)	Research Question 1
Journal article – Baird et al. (2009)	Research Question 3
Journal article – Blackwell et al. (2007)	Research Question 1
Video – Romero (2015)	Research Question 3
Video – Yeager (2017	Research Question 3

Data Collection

Data collection for this sequential explanatory mixed-methods design [QUAN(+qual)] will involve first collecting pre- and post-intervention quantitative and qualitative data (Creswell & Plano Clark, 2011). Data were collected in several formats: inventories, self-report surveys, observation protocol, course artifacts, activity logs, and individually recorded semi-structured interviews (Table 22). All participants were assigned an identification number and pseudonym prior to data collection. The confidential identification number and pseudonym are stored in a separately located file from the data.

Table 22

Mixed-Methods Data Collection and Timeline

Measure	Quantitative	Qualitative	Data Collection Type	Timeline
Mindset Knowledge Inventory	x		Web and paper-based inventory	July 2018 and August 2018
Teachers' Sense of Efficacy Scale (Tschannen-Moran & Woolfolk Hoy, 2001)	x		Web and paper-based survey	July 2018 and August 2018
Course Artifacts		x	Paper-based	August 2018
Reformed Teaching Observation Protocol (Sawada et al., 2002)	x	x	Paper-based observation form	August 2018
Individual Semi-Structured Interview Transcripts		x	Transcripts	August 2018
IDEA Student Ratings of Instruction Diagnostic Feedback 2016 Instrument (Li et al., 2016)	x		Paper-based survey	August 2018
Instructor and Participant Activity Logs	x		Web and paper-based Logs	August 2018

inventory. Mindset Knowledge Inventory responses were collected pre- and post-intervention (July 2018 and August 2018) using an online program, SurveyMonkey. A link to the Mindset Knowledge Inventory was sent via email to the participants the week prior to the start of the practicum and on Thursday afternoon during the practicum week. A post-intervention paper-based Mindset Knowledge Inventory was provided to 11 participants who did not have access to a computer during the practicum week.

surveys. The Teachers' Sense of Efficacy Scale (TSES; Tschannen-Moran & Woolfolk Hoy, 2001) was collected pre- and post-intervention (July 2018 and August 2018) using SurveyMonkey. A link to the TSES was sent via email to the participants the week prior to the

practicum to be completed by Sunday before the practicum begins and on Thursday afternoon during the practicum week. Eleven participants who did not have access to a computer during the practicum week completed a post-intervention paper-based TSES. The IDEA Student Ratings of Instruction Diagnostic Feedback $_{2016}$ Instrument (Li et al., 2016) responses were collected post-intervention (August 2018) using a paper-based format. The IDEA Student Ratings of Instruction Diagnostic Feedback $_{2016}$ Instrument was distributed to the participants during the last practicum session on Friday.

course artifacts. Participants' typed or handwritten responses to discussion and reflection prompts were collected at the conclusion of the practicum days on Tuesday, Wednesday, Thursday, and Friday.

observations. The course instructors used the Reformed Teaching Observation Protocol (Sawada et al., 2002) twice during the practicum week, on Tuesday and Thursday (August 2018) using a paper-based format.

interview transcripts. The semi-structured interviews were conducted in August 2018 with four participants at the conclusion of the practicum. The interviews lasted approximately 15 minutes. Interviews were recorded using iRecorder.

activity logs. Course instructor and participant activity logs are Excel spreadsheets that instructors and treatment group participants will complete at the end of each practicum day. Paper-based participant Excel spreadsheets were distributed one the first day of the practicum.

Data Analysis

Descriptive and inferential statistics were used to analyze the quantitative data in relation to the three outcomes evaluation research questions. A summary matrix, Table I1 in Appendix I, indicates the alignment between research questions, data collection, and data analysis.

Inventory, survey, and quantitative observational data was entered into SPSS and cleaned**.** Descriptive statistics were calculated for the Mindset Knowledge Inventory, the Teachers' Sense of Efficacy Scale (TSES; Tschannen-Moran & Woolfolk Hoy, 2001), and the Reformed Teaching Observation Protocol (RTOP; Sawada, 2002) for the sample as a whole as indicated in the summary matrix in Appendix I. A Wilcoxon Signed Rank Test was performed to examine differences between ETs' mean Mindset Knowledge Inventory score from pre- to post-intervention. A Wilcoxon Signed Rank Test was also performed to examine differences between ETs' mean self-efficacy ratings pre- and post-intervention. An analysis of variance (ANOVA) was performed to examine participants' change in self-efficacy beliefs in light of participant demographic characteristics. A paired-sample t-test was used to examine the change in ETs' mean observational ratings for use of growth mindset instructional practices from pre- to post-intervention. An analysis of variance (ANOVA) was also performed to examine participants' change in each of the three dependent variables in light of participant demographics. Pearson product correlations (Pearson's r) was calculated to examine the association of ETs' content knowledge of student mindset information, self-efficacy beliefs, and use of growth mindset instructional practices. Pearson's r was also calculated to examine the association between ETs' general self-efficacy ratings and self-efficacy ratings for growth mindset instructional practices.

implementation fidelity. Additionally, descriptive statistics including establishing the frequency for AL activities provided and received and calculating means and standard deviations for the ETs' perception of the quality of the course were performed to examine the process evaluation question, What variations in implementation, if any, occur that are likely to affect the RETC's outcomes?

qualitative data analysis. There were three kinds of qualitative data to analyze in including course artifacts (e.g., ETs' small-group discussion notes and written reflection responses to prompts during the course), open-ended survey questions, and interview transcripts. I analyzed the qualitative data by using a seven-step analytic procedure recommended by Strauss and Corbin (1997) to develop codes and themes: (a) organizing the data, (b) reading and re-reading the data, (c) coding the data, (d) generating themes, (e) interpreting the findings, (f) searching for alternative understandings from external reviewers, and (g) communicating the findings. Strauss and Corbin's (1997) seven-step analytical process reflects an emergent design as the analysis will reveal the codes and themes (Leech & Onwuegbuzie, 2007). The coding process was an inductive coding process (Strauss & Corbin, 1997) as data were coded and labeled based on topics from mindset literature (Dweck, 2000; Kamins & Dweck, 1999; Strahan et al., 2017; Yeager et al., 2016), which was used to generate emergent categories beyond the a priori themes of: (a) malleability of intelligence, (b) learning goals, (c) process-oriented feedback, (d) use of strategies, (e) effort, (f) resilience, (g) growth mindset instructional strategies, (h) observations of expert therapists, (i) role-playing in simulated situations while being observed, (j) participate in small-group discussions, and (k) read, watch, and write about mindset information. To help minimize researcher bias, after finalizing the codes and themes, another Johns Hopkins doctoral student who has had the Collaborative Institutional Training Initiative (CITI) training acted as an external reviewer and independently reviewed the categories and themes. Following the review, the external reviewer and I discussed the codes and themes. The external reviewer suggested changing one code and theme but agreed with the remaining codes and themes.

Chapter Conclusion

Informed by the literature on social cognitive theory (Bandura, 1986) mindsets, effective PD, and the needs assessment, the RETC intervention was designed to improve ETs' content knowledge of student mindset information, self-efficacy beliefs for using growth mindset instructional practices, and implementation of growth mindset instructional practices.

This chapter presented a quasi-experimental sequential explanatory mixed-methods research design [QUAN(+qual)] for data collection and analyses. Five research questions guided the selection of a mixed-methods research methodology, and the corresponding research design to accommodate data collection, data analysis, and data interpretation for the intervention. The chapter also provided an overview of the RETC outcome and process evaluation purpose, 30 participants, instruments, intervention components, and procedures involved in the mixed-methods research design.

Chapter 5

Findings and Discussion

High-quality professional development is an essential element in educational reform (Guskey, 2002). However, Guskey (1986) suggests that professional development programs are more likely to fail when the program developers and implementers do not take into consideration what motivates educators to participate in professional development and the process by which educators change. Social cognitive theory and triadic reciprocal determinism (Bandura, 1997) provided a framework for understanding the process of change in educational therapists' knowledge, self-beliefs, and instructional practices related to growth mindsets that occurred through participation in the Revised Educational Therapy Course (RETC). The 21 hours of professional learning associated with the RETC occurred during a week-long face-to-face practicum. The RETC was embedded in an existing Learning Development Center's educational therapist certification training course that was implemented as intended in August 2018. Providing educational therapists professional learning that utilizes active learning is an approach facilitated their content knowledge of student mindset information, self-efficacy for implementing the new knowledge and instructional practices, and implementation of growth mindset instructional practices in addressing the reading needs of their students.

This section includes the results from the data analysis of the Revised Educational Therapy Course (RETC) intervention study. The purpose of this analysis was to: (a) examine educational therapists' (ETs) knowledge of student mindset information, (b) self-efficacy beliefs for using instructional practices that focus on developing students' growth mindset, and (c) use of growth mindset instructional practices during reading instruction with students with LD in association with their participation in the RETC. In Chapter 4, I presented the research study

design, RETC active learning (AL) activities, and the growth mindset instructional practices (Blackwell et al., 2007; Kamins & Dweck, 1999; Strahan et al., 2017; Yeager et al., 2016). The goals of this chapter include a discussion of the findings for each research question and the findings' significance to future research contextualized in the field of LD research. The following five research questions focused the analyses within this study:

Research Question 1: To what extent does participation in the RETC increase an ET's content knowledge of student mindset information?

Research Question 2: To what extent does participation in the RETC increase an ET's self-efficacy for using instructional practices that focus on developing a growth mindset in students with LD?

Research Question 3: To what extent does participation in the RETC increase an ET's use of growth mindset instructional practices during reading instruction with students with LD?

Research Question 4: What components of the RETC do ETs identify as useful or not useful in facilitating self-efficacy beliefs to implement instructional practices that focus on developing a growth mindset in students with LD?

Research Question 5: What observed variations in RETC implementation occur that affect the outcomes in ETs' self-efficacy for using instructional practices that focus on developing a growth mindset in students with LD?

Research Question 1

Content Knowledge of Student Mindset Information

In this section, I investigated the first research question which focused on whether participants' content knowledge of student mindset information changed through participation in

the RETC. To provide a frame of reference about participants' content knowledge of student mindset information as it relates to the RETC, it is helpful to first examine the participants' prior experience with student mindset information outside of the RETC. Twenty-six of the participants (87%) indicated they had not participated in other growth mindset workshops or received professional development training on mindset information prior to participating in the RETC. Descriptive and inferential statistics were used to analyze the quantitative data related to content knowledge of student mindset information as measured by the researcher-created Mindset Knowledge Inventory (MKI). Qualitative data in the form of course artifacts including small-group discussion notes and written responses to discussion questions were also analyzed to provide insights into participants' content knowledge of student mindset information.

Cronbach's alpha was used to assess the reliability or internal consistency of the researcher-created MKI. A moderate internal consistency ($a = 0.73$; $p < .001$) was demonstrated. Considering measures of central tendency, Table 23 highlights the descriptive statistical analysis of the MKI.

Table 23

Summary of Means, Standard Deviations, Range of Scores on the Mindset Knowledge Inventory

				Range	
Test Condition	*N*	*M*	*SD*	Minimum	Maximum
Pre	30	61.2	12.6	40.0	88.0
Post	30	78.5	11.0	44.0	96.0

Across the pre- and post-test results, MKI scores ranged from 40 to 96 with 100 being the highest score possible. In total, 28 of the participants (93%) improved their MKI scores by four or more points between pre-test and post-test. The remaining two participants had no change in pre- and post-test scores. To ensure that the instrument data collection format did not

statistically impact the findings, a comparison of the paper-based MKI post-intervention mean scores (n = 11, m = 77.4, SD = 10.7) and the web-based mean scores (n = 19, m = 79.1, SD = 11.4) revealed no statistical difference between the scores (t = -0.40, df = 28, p = .69).

Before analyzing the impact of the RETC treatment variable upon participants' content knowledge of student mindset information, the post-intervention data were analyzed to determine the characteristics of the data. To determine if the assumption of normality had been met, the skewness and kurtosis, as well as the Shapiro-Wilk's W test, were conducted. Analysis of the difference between the paired values in the educational therapist's content knowledge of student mindset information, revealed an abnormal distribution with a negative (left) skew (w = 0.91, df = 30; skewness = -0.23, kurtosis = -1.2, $p < .01$). Therefore, in light of the violation of the assumption of normality, to determine whether the educational therapists' content knowledge for student mindset information changed across participation in the RETC, pre- and post-intervention MKI scores were compared using the non-parametric alternative to the t-test of Dependent Means, the Wilcoxon Signed Rank Test. The Wilcoxon Signed Rank Test revealed a significant difference between pre-intervention MKI score (N = 30, M = 61.2, SD = 12.6) and post-intervention MKI score (N = 30, M = 78.5, SD = 11.0, $p < .001$). Table 24 shows the statistical significance of the RETC's impact on participant content knowledge of student mindset information and the treatment effect size.

Table 24

MKI Differences in Participants Knowledge of Students' Mindset Information and Treatment Effect Size

Test Condition	*N*	Wilcoxon *w*	*SE*	*z*	*d*
Pre-Post Test	30	406.00	43.78	4.64***	3.19[a]

Note. ***$p < .001$. [a]Very Large Effect Size ($d \geq 1.30$)

The quantitative findings for research question one (RQ 1) indicate that there was a statistically significant improvement ($p < .001$) in educational therapists' content knowledge of student mindset information as measured by the MKI. Furthermore, the magnitude of the treatment effect size is considered very large ($d = 3.19$). An examination of qualitative data provided insight and support for the quantitative findings of a large treatment effect and statistically significant improvement in participants' content knowledge of student mindset information.

RQ 1: content knowledge of student mindset information. Three of the written reflection responses to the journal articles read as a part of the read, watch, write AL activities and the corresponding small-group discussion AL activities aligned with the first research question (See Table 21). Two key themes and four coding categories emerged from the qualitative analysis that provided insight into the educational therapists' content knowledge of student mindset information. The two emergent themes were *Cohesive Content Knowledge*, and *Emerging Content Knowledge*. The themes shared the same codes as I deemed *Cohesive Content Knowledge* and *Emerging Content Knowledge* themes including the same codes, but the *Cohesive Content Knowledge* theme reflected all four of the codes whereas participants may have only written about three codes in *Emerging Content Knowledge*. Following the external reviewer's independent review of the themes and codes, the external reviewer and I discussed the themes and codes for the three written reflection responses. The external reviewer suggested

changing the researcher-identified theme of *Partial Content Knowledge* to *Emerging Content Knowledge* as it demonstrated the potential for participants' continued growth in knowledge of mindset information. Table 25 highlights the Cohesive Content Knowledge emergent theme and codes.

Table 25

Response Codes Grouped by Theme and Category, and AL Activity Central to Content Knowledge of Student Mindset Information

Theme and Code	Written Reflection and Small-group Discussion 1 Description	Written Reflection and Small-Group Discussion 2 Description	Written Reflection and Small-Group Discussion 4 Description
Cohesive Content Knowledge	Cohesive response that is accurate and reflects a synthesis of student mindset content knowledge	Cohesive response that is accurate and reflects an awareness of how implicit beliefs about intelligence develop	Cohesive response that is accurate and reflects knowledge of behavioral patterns associated with mindset type
Concepts	Labels and defines mindset terms	Labels and defines types of praise and gender-specific praise	Identifies adolescent transition period and describes the impact of mindset during the transition
Theories	Describes how type of mindset is associated with type of learning goal	Describes the effect of types of praise on students' mindset beliefs	Describes the impact of mindset on motivational patterns
Application	Provides an example of a student with a fixed or growth mindset and the type of learning goal used	Provides an example of what they would share with a peer about the impact of process-praise	Provides an example of student behavioral patterns related to mindset type
Reflection	Explains how students' learning goal impacted the use of strategies or effort	Interprets the effect of types of praise on students' mindset beliefs, behaviors, and attitudes	Analyzes the impact of students' mindset on the students' effort or response to failure

Participants who demonstrated *Cohesive Content Knowledge* were able to incorporate concepts, theories, application, and reflection related to content knowledge of student mindset

information into their written reflections and small-group discussions. On average, sixty-three percent of the participants were able to address the four coding categories of concepts, theories, application, and reflection related to content knowledge of student mindset information. Comparatively, 37% of participants demonstrated *Emerging Content Knowledge* in which participants' responses reflected at least three coding categories. The following sections highlight various participants' written reflection responses to the discussion prompts as examples of the concepts, theories, application, and reflection coding categories.

Concepts

The Concepts coding category that align with research question one (RQ 1) encompassed responses related to labeling and defining theories of intelligence, labeling and describing the types of students' mindsets (e.g., entity, fixed, incremental, and growth), related learning goals, and the different types of praise and identifies the impact of mindset during the adolescent transition period. Illustratively, related to theories of intelligence, Participant 14 wrote, "The article [Dweck & Leggett, 1998] spoke about two theories of intelligence, incremental and entity. Incremental is the belief that intelligence is malleable. Entity sees intelligence as static." Concerning labeling and defining types of praise,

Participant 10 wrote in her discussion reflection response to Gunderson et al.'s (2013) article:

> Process praise commends the child's effort, strategy, or actions and encourages a student to see that it is important to make mistakes so that we can learn from them. On the other hand, person praise lauds the achievement, intellect or ability of a child. They [the researchers] also found that boys were more likely than girls to receive process praise.

Relative to adolescent transition period and the impact of mindset,

Participant 11 wrote in her discussion reflection response to Blackwell et al.'s (207) article:

> In this particular study, researchers were looking at [mindset] effects specific to adolescents. While entity-minded learners and incrementally minded learners may have shown very little differences in elementary grades, stark differences emerged as they reach (sic) this pivotal age, perhaps because everything seems to jump in complexity (physically, emotionally, academically and socially). A growth, or incremental mindset appears to be especially vital at this juncture of life.

As evidenced above, participants demonstrated the ability to label and define terms related to student mindset information which demonstrated content knowledge of student mindset information, the dependent variable of interest in research question one (RQ 1).

Theories

In this coding category, participants' responses reflected an ability to identify the association between theory of intelligence and type of learning goal, the effect of praise on student mindset beliefs, and the impact of mindset on motivational patterns. For example, Participant 19 wrote in her discussion reflection response to Dweck and Leggett's (1988) article:

> Research shows that there is a correlation between our beliefs about intelligence and the kinds of learning goals we pursue. Typically people who believe that intelligence is something fixed, often pursue performance goals and will either attempt to demonstrate their abilities through a learning task, if they judge their intelligence adequate for a task. Or they will try to avoid challenging learning tasks if they feel their intelligence is not adequate. In contrast, a person with an incremental view of intelligence will see learning challenges as opportunities to improve competency and ability and to achieve mastery.

Participant 19 also wrote about the effect of praise on student mindset belief based on Gunderson et al.'s (2013) study:

> The things for which we praise children positively correlate to the type of beliefs they develop about their own intelligence. Laboratory studies of children at several ages has shown that person praise (*You are a good learner.*) often positively correlates with the development of belief that one's intellectual ability is an unchangeable entity that you are born with. Conversely, these short-term laboratory studies also demonstrate that process praise (*You worked really hard!*) affects positively the development of a belief that one's intellect is malleable, through effort, practice and working through challenges.

Relative to the impact of mindset on motivational patterns,

Participant 20 wrote in her discussion reflection response to Blackwell et al.'s (207) article:

> Research shows students response to academic challenges can be correlated to whether they believe intelligence is fixed or changeable. Students who entered junior high with a growth mindset had better grades the first year, even controlling for previous achievement. One of the main differences is student's responding to failure with more effort and thus higher achievement.

Participants' responses indicated knowledge about the reciprocal relationship between mindset type, learning goal, and academic achievement which according to Dweck (2000) and Dweck and Leggett (1988) are key concepts in content knowledge of student mindset information.

Application and Reflection

These coding categories encompassed participants' written reflection discussion responses that described a personal example, an interpretation of the example in light of content knowledge about student mindset information, and thinking about what the example meant for them as a learner and practicing professional.

Participant 30 wrote:

> As Robert, one of the students I tutor, entered seventh grade he brought with him his fixed mindset about intelligence, and the performance-related goals that co-exist with it. Robert had struggled some during elementary school with learning disabilities but our work together to fill in his gaps related to low reading achievement and written expression had been successful in bringing him up to grade level. However, the increased demands, both cognitive and organizational, of the middle school environment, caused him to begin to struggle in certain subjects, and in Science in particular. Robert didn't enjoy Science, believed he wasn't good at it, and as the rigor of the coursework and the workload increased, he backed away from engaging in the class in any effortful way. Negative behaviors included not completing classwork and turning in assignments. In my work with Robert this coming year, I plan to share information about growth versus fixed mindsets and their relationship to learning goals and outcomes.

The response Participant 30 offered was typical of the application and reflection responses study participants provided. Participants' responses demonstrated their ability to generate examples that reflected mindset concepts, theories, and personal reaction to the content knowledge of student mindset information.

Considering participants' qualitative responses reflecting content knowledge of student mindset information combined with the significant positive effects found in the quantitative analysis of the MKI it is possible that participants' schema, knowledge structures that link related concepts (Spillane, Reiser, & Reimer, 2002), about student mindset information may have been strengthened through participation in the RETC. To examine the participants' change in student mindset content knowledge in light of participant demographic characteristics, a one-way Analysis of Variance (ANOVA) was conducted to assess the effect of years of teaching

experience in K-12 education and years teaching reading to students with LD. The three categories for each of these identifier variables were 0-5 years, 6-10 years and 10+ years. Table 26 indicates participants MKI scores based on years of teaching in K-12 education and years teaching reading to students with LD.

Table 26

Results of Mindset Knowledge Inventory Based on Participant Demographics

Variable	*n*	*M*	*SD*
Years of Teaching Participant Demographic			
0-5 Years	6	78.0	9.3
6-10 Years	10	82.8	5.6
10+ Years	14	75.7	11.0
Years of Teaching Reading to Students with Learning Disabilities Participant Demographic			
0-5 Years	18	81.1	9.3
6-10 Years	8	79.0	7.0
10+ Years	4	66.0	17.7

Based on the findings from an ANOVA, a significant difference was not found in these variables (Table 27).

Table 27

Results of One-Way ANOVA of Change in Mindset Content Knowledge and Participant Demographic

Variable	*df*	*F*	*p*
Years of Teaching	2	0.79	.47
Years Teaching Reading to Students with Learning Disabilities	2	1.23	.31

The ANOVA outcomes indicated that in this study, years of teaching experience in K-12 education and years teaching reading to students with LD were not moderating variables affecting the relationship between participants' pre-intervention and post-intervention content knowledge of student mindset information. Additionally, Pearson's r was also calculated to

examine the association between educational therapists' other participant characteristics and content knowledge of students' mindset. Participants' highest degree earned (r = -.18, p = .34), mindset beliefs (r = -.35, p = .06), and participation in other growth mindset workshops (r = -.10, p = .77) were not correlated with MKI post-intervention scores. Collectively, the results from the quantitative and qualitative analyses in this section indicated Hypothesis 1 was correct, which proposed that educational therapists in the RETC will improve their content knowledge of student mindset information.

Research Question Two

Self-efficacy for Instructional Practices

In this section, I examined the second research question which focused on educational therapist's self-efficacy for using instructional practices that can develop a growth mindset in students with LD. Because the literature suggests that educators with a growth mindset exhibit higher self-efficacy beliefs than educators holding a fixed mindset (Leroy et al., 2007), the mindset beliefs of educational therapists were assessed pre- and post-intervention. The total sample pre-intervention mean score (M = 4.9, SD = 0.8) and post-intervention mean score (M = 5.8, SD = 0.4) fell within the range of growth mindset scores. According to Dweck and Henderson (1989), mindset scores fall on a scale of one to six and growth mindset scores fall between scores of four and six. Although the participants' pre- and post-intervention mindset belief scores both fell in the growth mindset score range, a paired sample t-test demonstrated that there was a significant difference between pre-intervention and post-intervention educational therapist growth mindset belief (t = 5.12, p < .001).

To investigate how educational therapists' sense of self-efficacy changed through participation in the RETC, I used descriptive and inferential statistics to analyze the quantitative

educational therapist self-efficacy data. Cronbach's alpha was used to assess the reliability of the TSES (Tschannen-Moran & Woolfolk Hoy, 2001). These values indicated a high internal consistency with an overall alpha = 0.97, Student Engagement subscale alpha = 0.91, Instructional Strategies subscale alpha = 0.90, and Growth Mindset Instructional Strategies subscale alpha = 0.83. Table 28 highlights the descriptive statistical analysis of the TSES (Tschannen-Moran & Woolfolk Hoy, 2001).

Table 28

Summary of Means, Standard Deviations, Range of Scores on the Teachers' Sense of Efficacy Scale

Teachers' Sense of Efficacy Scale	*n*	*M*	*SD*	Range	
				Minimum	Maximum
Pre Overall	27	6.8	0.8	5.3	8.7
Post Overall	28	7.9	1.0	4.3	9.0
Pre Student Engagement	28	6.7	1.0	4.5	8.6
Post Student Engagement	29	7.7	1.3	3.0	9.0
Pre Instructional Strategies	29	6.9	0.9	4.5	8.8
Post Instructional Strategies	29	7.8	1.3	3.0	9.0
Pre Growth Mindset Instructional Strategies	30	7.0	0.7	5.2	8.7
Post Growth Mindset Instructional Strategies	30	8.0	0.7	6.1	9.0

The pre-intervention mean scores for the overall TSES survey ($M = 6.8$, $SD = 0.8$), Student Engagement subscale ($M = 6.7$, $SD = 1.0$), Instructional Strategies subscale ($M = 6.9$, $SD = 0.9$), and Growth Mindset Instructional Strategies subscale ($M = 7.0$, $SD = 0.7$) fell between

the 5th self-efficacy rating scale anchor of S*ome Degree* and the 7th self-efficacy rating scale anchor of *Quite a Bit* on the nine-category TSES (Tshchannen-Moran & Woolfolk Hoy, 2001) rating scale. Comparatively, the post-intervention mean scores for the overall TSES survey (M = 7.9, SD = 1.0), Student Engagement subscale (M = 7.7, SD = 1.3), Instructional Strategies subscale (M = 7.8, SD = 1.3), and Growth Mindset Instructional Strategies subscale (M = 8.0, SD = 0.7) fell between the 7th self-efficacy rating scale anchor of *Quite a Bit* and the 9th self-efficacy rating scale anchor of *A Great Deal* suggesting that participants qualitatively perceived their post-intervention self-efficacy higher than their pre-intervention self-efficacy beliefs. To ensure that the instrument data collection format did not statistically impact the findings, a comparison of the paper-based TSES post-intervention mean scores (n = 11, m = 7.8, SD = 1.0) and the web-based mean scores (n = 17, m = 7.9, SD = 1.2) revealed no statistical difference between the scores (t = -0.15, df = 26, p = .88).

Prior to comparing differences in the sample population's mean scores, the post-intervention TSES (Tschannen-Moran & Woolfolk Hoy, 2001) data were analyzed to determine if the assumption of normality had been met. Analysis of the difference between the paired values in the educational therapist's self-efficacy beliefs, revealed an abnormal distribution with a negative (left) skew (w = 0.72, df = 25, skewness = -2.6, kurtosis = 8.2, $p < .001$). Based on the violation of the assumption of normality, the Wilcoxon Signed Rank Test was used to determine whether the educational therapists' self-efficacy beliefs changed as a result of participation in the intervention. Pre- and post-intervention overall teacher self-efficacy scores and subscale scores from the TSES survey (Tschannen-Moran & Woolfolk Hoy, 2001) were compared. Table 29 illustrates the statistical significance of the RETC's impact upon participant self-efficacy beliefs and the treatment effect size.

Table 29

TSES Differences in Participants' Self-Efficacy Beliefs and Treatment Effect Size

Test Condition	*n*	Wilcoxon *w*	*SE*	*z*	*d*
Overall Self-Efficacy Pre-Post Test	25	293.50	37.16	3.53***	1.99[a]
Student Engagement Pre-Post Test	27	324.00	41.61	3.24**	1.60[a]
Instructional Strategies Pre-Post Test	28	358.00	43.90	3.53***	1.80[a]
Growth Mindset Instructional Strategies Pre-Post Test	30	431.00	48.60	4.10***	2.26[a]

Note. **p < .01. ***$p < .001$. [a]Very Large Effect Size ($d \geq 1.30$)

The findings for research question two (RQ 2) indicated a statistically significant improvement ($p < .001$) in educational therapists' overall self-efficacy beliefs as measured by the TSES. Additionally, there were statistically significant improvements in each of the three TSES subscales with *p*-values ranging from < .01 to < .001. Across all TSES subscales and the overall TSES survey (Tschannen-Moran & Woolfolk Hoy, 2001), the magnitude of treatment effect sizes are considered very large ($d \geq 1.30$) with the Growth Mindset Instructional Strategies subscale demonstrating the largest treatment effect size ($d = 2.26$).

To examine the participants' change in self-efficacy beliefs in light of participant demographic characteristics, a one-way ANOVA was conducted to assess the effect of years of teaching experience in K-12 education and years teaching reading to students with LD. The three categories for each of the variables were 0-5 years, 6-10 years and 10+ years. A significant difference was not found in these variables (Table 30).

Table 30

Results of One-Way ANOVA of Change in Self-Efficacy Beliefs and Participant Demographic

Variable	*df*	*F*	*p*
Years of Teaching	2	0.97	.39
Years Teaching Reading to Students with Learning Disabilities	2	0.73	.49

Pearson's r correlation was used to examine the relationship between participants' self-efficacy for general instructional strategies and growth mindset instructional strategies. There was a moderate, positive correlation ($r = .70$, $p < .001$, 2-tailed) between the general instructional strategies and the growth mindset instructional strategies. There are at least two possible explanations for this finding that could be explored in future investigations. First, it is possible that the participants did not head the instructions to rate themselves on the second iteration of the Instructional Strategies subscale while considering implementing growth mindset instructional strategies. Second, it is possible that participants did consider implementing growth mindset instructional strategies when responding to the instructional strategy items the second time. The second scenario suggests a positive relationship between the two domains, general instructional self-efficacy, and specific growth mindset instructional self-efficacy.

Lastly, Pearson's r was also calculated to examine the association between educational therapists' content knowledge of student mindset information and their self-efficacy beliefs. Educational therapists' content knowledge of student mindset information and their overall self-efficacy beliefs did not demonstrate a statistically significant correlation ($r = .30$, $p < .13$). The Student Engagement subscale was the only TSES survey subscale (Tschannen-Moran & Woolfolk Hoy, 2001) that demonstrated a moderate positive correlation with educational therapists' content knowledge of mindset information ($r = .32$, $p < .05$, one-tailed). Tschannen-Moran and Woolfolk Hoy (2007) indicate that "teachers are often left to their own creativity and

strength of personality to cultivate strategies for *Student Engagement* or to manage in its absence" (p. 19). Pearson's r was also calculated to examine the association between educational therapists' other participant characteristics and their self-efficacy beliefs. Participants' highest degree earned (r = -.24, p = .21), mindset beliefs (r = -.16, p = .40), and participation in other growth mindset workshops (r = -.10, p = .62) were not correlated with TSES post-intervention scores. The finding from this study suggested that as educational therapists develop stronger schemas about student mindset information, this enhanced knowledge may facilitate their self-efficacy beliefs to cultivate student engagement.

Overall, the results from the quantitative analyses in this section indicate Hypothesis 3 was correct, which proposed educational therapists participating in the RETC will demonstrate improved self-efficacy beliefs for the use of growth mindset instructional practices. However, there is not enough evidence to support Hypothesis 2, that educational therapists' content knowledge of student mindset information is positively correlated with more positive self-efficacy beliefs for the use of growth mindset instructional practices.

Research Question Three

Growth Mindset Instructional Practices

In this section, I investigated the third research question which focused on whether participants' use of growth mindset instructional practices during reading instruction changed through participation in the RETC. First, descriptive and inferential statistics were used to examine the quantitative data on educational therapist growth mindset instructional practices as measured by the RTOP (Sawada et al., 2002). Second, qualitative data in the form of course artifacts including small-group discussion notes and written responses to discussion questions

were also analyzed to provide insights into participants' use of growth mindset instructional practices.

Cronbach's alpha was used to assess the reliability of the RTOP (Sawada et al., 2002). These values indicated a high internal consistency with a Cronbach' alpha = 0.83 for the first observation and a = 0.95 for the second observation. The overall reliability of the RTOP (a = 0.93) also demonstrated a high internal consistency. Table 31 highlights the measures of central tendency of the RTOP.

Table 31

Summary of Means, Standard Deviations, Range of Scores on the Reformed Teaching Observation Protocol

				Range	
Test Condition	*N*	*M*	*SD*	Minimum	Maximum
Observation 1	30	42.8	5.4	29.0	55.0
Observation 2	30	80.6	10.0	66.0	98.0

RTOP scores can range from 0 to 100, with higher scores representing more learner-centered classrooms and lower scores representing teacher-centered classrooms (Ebert-May et al., 2011). According to Sawada (2003), RTOP scores are classified into five different categories. The pre-intervention mean scores for RTOP Observation 1 ($M = 42.8$, $SD = 5.4$) fall within Category II (e.g., scores between 31- 45) which indicate the type of teaching is mainly lecture with some demonstration and minimal student participation (Sawada, 2003). The post-intervention mean scores for RTOP Observation 2 ($M = 80.6$, $SD = 10.0$) fell within Category V (e.g., scores between 76 -100) which indicated active student involvement, student explanation, and critical reflection (Sawada, 2003).

The RTOP post-intervention data were also analyzed to determine if the assumption of normality has been met and the data were determined to be normally distributed ($w = 0.94$, $df =$

30, skewness = 0.30, kurtosis = -1.18, $p = .07$). To examine whether educational therapist use of growth mindset instructional practices during reading instruction changed through participation in the intervention, pre and post intervention observation scores from the RTOP survey (Sawada et al., 2002) were compared using a paired samples t-test (Table 32).

Table 32

Participant Change in Instructional Practices During Reading Instruction and Treatment Effect Size

Reformed Teaching Observation Protocol (RTOP) (Sawada et al., 2002)	*M* Pre-Intervention Observation 1	*SD*	*M* Post-Intervention Observation 2	*SD*	*t*	*d*
Overall RTOP	1.7	0.2	3.2	0.4	21.31***	5.45
Lesson Plan & Implementation	1.5	1.0	3.1	0.4	19.94***	4.37
Propositional Knowledge	1.6	0.3	3.3	0.4	18.85***	4.49
Procedural Knowledge	1.6	0.2	3.1	0.5	14.78***	3.12
Classroom Culture	1.6	0.3	3.1	0.4	16.02***	3.72
Student-Teacher Relationship	2.0	0.2	3.5	0.4	17.09***	3.21

Note. $N = 30$, ***$p < .001$, two-tailed

The quantitative findings for research question three (RQ 3) indicated a statistically significant difference between overall pre-intervention RTOP Observation 1 scores ($M = 42.8$, $SD = 5.4$) and overall post-intervention RTOP Observation 2 scores ($M = 80.6$, $SD = 10.0$, $p < .001$). Furthermore, statistically significant differences were noted across all five RTOP subscales. The magnitude of treatment effect size for the overall RTOP score ($d = 5.45$) and subscale scores which range from 3.12 to 4.49 are considered very large. An examination of qualitative data provides insight and support for the quantitative findings of a large treatment effect and statistically significant improvement in participants' use of growth mindset instructional practices.

Use of Growth Mindset Instructional Practices

Three different written reflection responses to the journal articles read as a part of the read, watch, write AL activities and the corresponding small-group discussion AL activities aligned with the third research question (See Table 21). One of the emergent themes was *Learner Identity,* with two coding categories, *LD Label* and *Maladaptive Non-Cognitive Beliefs*. The second emergent theme identified was *Gender and Mindset* with three coding categories, *Gender-Specific Praise*, *Closing the Math Achievement Gap*, and *Growth Mindset in Adolescent Girls*. The third emergent theme was *Growth Mindset Construct* with two coding categories, *Malleability of intelligence* and *Resilience*. The fourth theme, *Growth Mindset Instructional Practices* was based on the four priori codes of the growth mindset instructional strategies taught during the RETC with an additional emergent coding category, *Growth Mindset Culture.* Following the external reviewer's independent review of the themes and codes, the external reviewer and I discussed the themes and codes for the three written reflection responses. The external reviewer agreed with all the themes but suggested changing the researcher-identified code of *Growth Mindset Environment to Growth Mindset Culture* as the term culture can be perceived as inclusive of environment. The following four tables describe the themes and codes and provide insight into the educational therapists' use of growth mindset instructional practices with students with LD.

learner identity. Learner identity can be defined as how a student views his/her ability to learn and how the student thinks about himself as a learner (Lawson, 2014). Table 33 highlights the *Learner Identity* theme, codes, a brief description of the theme and codes, and excerpts from a participant's written reflection in response to Baird et al.'s (2009) article.

Table 33

Response Codes Grouped by Theme and Category Central to Learner Identity

Theme and Code	Description	Participant 10 Example
Learner Identity	How an individual feels and thinks about himself/herself as a learner (Lawson, 2014)	"Prior to the diagnosis of LD, the student has already established a history of poor academic performance. Efforts historically have equaled failure. The student feels if they have to make an effort, then they must not be intelligent enough. This has a major impact on the student's self-efficacy."
LD Label	Describes how an LD label can impact students' intelligence beliefs	"Once they have the diagnosis of learning disabled, they interpret it as having lower potential and fixed limits for increasing intelligence, therefore, quickly fall and solidify into the entity mindset."
Maladaptive Non-Cognitive Beliefs	Identifies that a student with LD often exhibit a pattern of low self-efficacy beliefs, fixed mindset, and performance learning goals	"Students with learning disabilities are highly more likely to have the entity view of intelligence, low academic self-efficacy, and favor performance goals than those without learning disabilities."

gender and mindset. Participants' written discussion reflections to the Romero (2015) video about growth mindsets indicated that gender is a factor that interacts with mindset including affecting the type of praise offered to students, academic achievement, or the impact of growth mindset on adolescent girls. Table 34 highlights the *Gender and Mindset* theme, codes, a brief description of the theme and codes, and example excerpts from participants' written reflections.

Table 34

Response Codes Grouped by Theme and Category Central to Gender and Mindset

Theme and Code	Description	Participant Example
Gender and Mindset	Impact of mindset messages on girls (Boaler, 2013)	"We have been in a society for years that has placed men in a higher category than women…As educators, we must do more to push our female students to a growth mindset and believing they have just as many giftings and abilities." (Participant 28)
Gender-Specific Praise	Describes the different types of praise given to boys compared to girls	"We often praise boys' process, meaning that they are showing strong effort and working hard to get better. However, for girls it is more likely that we praise their product and how they are smart, pretty, or achieved a desired outcome." (Participant 30)
Closing the Math Achievement Gap	Provides information about how providing process feedback and teaching girls about the malleability of the brain can close the math achievement gender gap.	"A single teaching on this topic [brain malleability] has been shown to close the gender gap between boys and girls on a standardized math test!" (Participant 29)
Growth Mindset in Adolescent Girls	Provides information about the importance of developing a growth mindset in adolescent girls	"If a middle school girl has a fixed mindset, they will likely avoid struggle and push back against showing effort. To them, this reflects an inability and shows they are incapable. They are already very self-aware at this time and failure reminds them that others are judging who they are. Thus, they turn to seeking effortless perfection." (Participant 30)

growth mindset construct. After viewing the Yeager (2017) video on mindsets, twenty of the 30 participants, or 66%, noted the positive effect of a growth mindset on students' learning responses (e.g., resilience) and academic achievement within their written reflections that addressed growth mindset instructional practices. Participants' responses align with mindset research that indicates the growth mindset construct positively affects

motivational and behavioral learning responses (Dweck, 2006). Table 35 highlights the *Mindset Construct* theme, codes, a brief description of the theme and codes, and example excerpts from participants' written reflections.

Table 35

Response Codes Grouped by Theme and Category Central to Growth Mindset Construct

Theme and Code	Description	Participant Example
Growth Mindset Construct	Describes the different motivational and behavioral learning responses associated with a growth mindset	"The heart of a growth mindset is that we are allowed and encouraged to learn from our challenges rather than being destroyed by them." (Participant 5)
Malleability of Intelligence	Expresses the belief that it is possible to change a student's mindset from fixed to growth	"Fixed mindsets are changeable. It is possible to take a child from this is 'just who I am' to 'this is who I will be.'" (Participant 25)
Resilience	Identifies that a student with a growth mindset responds to challenges with resiliency	"In the face of a setback, individuals of a growth mindset that face a setback remain resilient and view the setback as a challenge." (Participant 27)

growth mindset instructional practices. There is increasing interest and understanding of the role educators have in developing and shaping students' beliefs about the malleability of intelligence (Kraft & Grace, 2016). Illustratively, 96% of the study participants (e.g., 29 out of 30 participants) who wrote about growth mindset instructional practices indicated they intended to tell students about the malleability of intelligence as an approach to facilitate their students' growth mindset. Table 36 highlights the *Growth Mindset Instructional Practices* theme, codes, a brief description of the theme and codes, and example excerpts from participants' written reflections.

Table 36

Response Codes Grouped by Theme and Category Central to Growth Mindset Instructional Practices

Theme and Code	Description	Participant Example
Growth Mindset Instructional Practices	Instructional strategies educational therapist use to help students with learning disabilities to develop a growth mindset	"Mindset can be changed and it is up to us in part to help students with a fixed mindset change into a growth mindset" (Participant 3).
Provide Information about Brain Malleability	Provide students with information about brain malleability and teach students new neural connections are established through effort and practice (Blackwell et al., 2007)	"When you rise to the challenge with effort, you will be rewarded by growing your brain. Then your brain will be that much stronger for the next challenge. And when things are feeling hard, just know that your brain is growing new neurotransmitters and getting stronger everyday." (Participant 14)
Provide Process-Oriented Feedback	Student receives feedback that focuses on effort or use of strategies (Kamins & Dweck, 1999)	"If we praise by saying 'you must have worked really hard on that' or 'I like how you're thinking about a new strategy to help you solve this' they will remember their ability to overcome obstacles even in small increments." (Participant 10)
Elicit Student Explanation of Growth Mindset Benefits	Learning from mistakes (Strahan et al., 2017)	"Teaching them to respond with a positive attitude that encourages them to view 'failure' as an opportunity to succeed next time by evaluating the mistake and learning from it." (Participant 12)
Guide Students to Try Different Learning Strategies	Educational therapist encourages student to persevere, increase effort, or try a new strategy when struggling to learn	"I would tell a student who has received a low grade to share about study strategies, how did he/she prepare for the class/test and lessons learned from this course in spite of the low grade. I would also explore persistence and strategies for learning that the student can incorporate for future course work." (Participant 5)
Growth Mindset Culture	School environment reflects growth mindset practices which are especially important for marginalized groups (girls, low ability grouping, and students from a low socio-economic status)	"I learned from the video, that students from low-income households are most affected by adopting a growth mindset, yet few of those in these struggling situations have this powerful mindset." (Participant 29) "A critical factor in developing that mindset is the praise. The praise needs to come from their complete environment. It's great when a 'good' teacher uses good mindset practices, but these practices need to ripple out into the entire school environment." (Participant 4)

Participants' reflections and small-group discussion notes reflected a desire to help students with LD to develop adaptive beliefs about intelligence and participants' preference for

the growth mindset instructional strategies they would use with students. In light of the participants' qualitative responses relative to growth mindset instructional practices, and the quantitative analysis of the RTOP (Sawada et al., 2002) that indicated a change in participants' instructional practices, an additional quantitative examination was conducted. An ANOVA was used to analyze the participants' change in growth mindset instructional practices relative to participant demographic characteristics including years of teaching experience in K-12 education and years teaching reading to students with LD. The three categories for each of these identifier variables were 0-5 years, 6-10 years and 10+ years. A significant difference was not found in these variables (Table 37).

Table 37

Results of One-Way ANOVA of Change in Growth Mindset Instructional Practices and Participant Demographic

Variable	df	*F*	*p*
Years of Teaching	2	1.00	.38
Years Teaching Reading to Students with Learning Disabilities	2	2.50	.10

Similar to the participants' content knowledge of student mindset information and self-efficacy beliefs findings, these findings suggest that in this study, years of teaching experience in K-12 education and years teaching reading to students with LD were not moderating variables affecting the strength or relationship between participants' pre-intervention and post-intervention use of growth mindset instructional practices. However, the quantitative findings for the RTOP in combination with the analysis of the qualitative course artifact data suggest Hypothesis 5 was correct, educational therapists who participate in the RETC will use growth mindset instructional practices while providing reading instruction to students with LD.

Pearson's r was calculated to examine the association between educational therapists' other participant characteristics and their use of growth mindset instructional practices. Participants' highest degree earned ($r = .13$, $p = .50$), mindset beliefs ($r = .18$, $p = .32$), and participation in other growth mindset workshops ($r = .19$, $p = .31$) were not correlated with RTOP post-intervention scores. Pearson's r correlation was also used to examine the relationship between educational therapists' use of growth mindset instructional practices with content knowledge of student mindset information, and with self-efficacy beliefs. No correlation was found with educational therapists' use of growth mindset instructional practices and their content knowledge of student mindset information ($r = .02$, $p = .91$) or with self-efficacy beliefs ($r = .23$, $p = .25$). Therefore, Hypothesis 4 was not confirmed in this study, which proposed educational therapists' self-efficacy beliefs for the use of growth mindset instructional practices were positively correlated with educational therapists' use of growth mindset instructional practices. There are at least two probable explanations for these findings. First, the lack of statistical significance suggests that the analysis may have been underpowered. Second, because the intervention was a short, intensive practicum week, it is possible that statistical correlations were not established during the short window between pre- and post-testing and that this is why the test failed to meet significance. Future research with larger sample sizes and longer intervention periods could shed further light on these findings.

Research Question Four

Facilitating Self-Efficacy Beliefs

This section focused on the findings for the fourth research question (RQ 4) which investigated what components of the RETC participants identified as useful or not useful in facilitating self-efficacy beliefs to implement instructional practices that focus on developing a

growth mindset in students with LD. Combining the quantitative information with qualitative information about participants' self-efficacy beliefs increases the validity of findings by triangulating data sources (Shadish et al., 2002). Because self-efficacy was the dimension of interest examined in the four participants randomly selected, Table 38 provides the TSES (Tschannen-Moran & Woolfolk Hoy, 2001) quantitative data as background information relative to the four participants who participated in the semi-structured interviews, the second phase of the data collection.

Table 38

Participant Pre- and Post-Intervention Mean and Change in Teachers' Sense of Efficacy Scores

Teacher Sense of Self-Efficacy (TSES; Tschannen-Moran & Woolfolk-Hoy, 2001)	Overall TSES	Student Engagement Subscale	Instructional Strategies Subscale	Growth Mindset Instructional Strategies Subscale
Participant 5 Pre-Intervention	6.0	5.7	6.2	6.0
Participant 5 Post-Intervention	7.5	6.8	7.7	7.8
Change in Score	1.5	1.1	1.5	1.8
Participant 10 Pre-Intervention	7.5	7.1	7.6	7.7
Participant 10 Post-Intervention	8.1	8.0	8.1	8.3
Change in Score	0.6	0.8	0.5	0.6
Participant 13 Pre-Intervention	7.7	7.7	7.6	7.8
Participant 13 Post-Intervention	8.8	8.8	8.8	8.8
Change in score	1.1	1.1	1.2	1.0
Participant 25 Pre-Intervention	5.3	5.1	5.7	5.2
Participant 25 Post-Intervention	7.2	6.5	5.1	8.2
Change in Score	1.9	1.3	-0.6	3.0

Note. $n = 4$

Table 38 distinguishes the different types of cases the four participants represented. Within the subset of the sample population, Participant 13 demonstrated the highest overall TSES (Tschannen-Moran and Woolfolk Hoy, 2001) post-intervention self-efficacy belief score (m = 8.8), and was also in the top three highest overall TSES self-efficacy scores for the sample population. Participant 10 had the second highest post-intervention overall TSES self-efficacy beliefs score (m = 8.1) within the subset of the sample population, but the smallest changes in scores from pre- to post-intervention (0.6). Within the subset of the sample population, Participant 25 demonstrated the lowest overall TSES self-efficacy belief score (m = 7.2) which was also a score that was below the mean population post-intervention overall TSES score (M = 7.9). Participant 5 also scored below the overall TSES mean population sample score (m = 7.5). Overall, three educational therapists who participated in the interviews (Participant 5, 10, and 13) demonstrated increases in their overall TSES scores and all subscales with mean score increases ranging from .5 to 3.0. One participant, Participant 25, demonstrated a decrease in her mean score in the instructional strategies subscale (-0.6). However, in the growth mindset instructional strategies subscale, Participant 25 demonstrated the largest mean score increase within the subset of the sample population of 3.0.

Barriers and Facilitators

The qualitative data collected from the four participant interviews provided insight into the participants' perceptions about the perceived barriers or supports provided by the RETC to develop participants' self-efficacy. Once the participant interviews were conducted and transcribed, participants' responses were coded using Straus and Corbin's (1997) seven-step procedure which employed both deductive and inductive coding. The *a priori* coding categories were the four AL activities utilized in the RETC: (a) observation of expert ETs, (b) role-playing

in simulated situations while being observed, (c) participate in small-group discussions, and (d) read, watch and write about mindset information. An additional coding category of *Course Content* emerged from the data, and two themes were identified as perceived barriers or facilitators of participants' self-efficacy beliefs, *Course Experience* and *Active Learning Activity* (Table 39).

Table 39

Educational Therapists' Perceived Barriers or Facilitators of Self-Efficacy Beliefs

Theme	Barriers	Facilitators
Course Experience	Lack of student to practice the growth mindset instructional strategies (Participant 13)	Course content (Participants 10 and 25)
Active Learning Activity		Reading journal articles (Participant 13) Watching videos and discussing PowerPoints (Participant 5) Writing reflections (Participant 10) Small-group discussions (Participants 5 and 13) Role-playing (Participant 25)

active learning activities. Participants indicated three of the four AL activities utilized in the RETC were beneficial in developing their self-efficacy to use instructional practices to develop a growth mindset in students with LD. As previously discussed in Chapter 4, each of the AL activities aligns with a source of self-efficacy beliefs as identified by Bandura (1986). Examining participants' responses in light of sources of self-efficacy beliefs offers insights into how participants' perceived their self-efficacy beliefs were changed through participation in the AL activities in the RETC intervention. Two AL activities, the small-group discussions and reading, writing, and watching AL activities align with verbal persuasion, an external source of self-efficacy (Tschannen-Moran & McMaster, 2009). Another AL activity, role-playing aligns

with an internal source of self-efficacy, mastery experiences (Usher & Pajares, 2008). For example, the participant with the lowest self-efficacy beliefs in the subset of the sample population, Participant 25, indicated that role-playing worked well to develop her self-efficacy beliefs. She stated, "Practicing the techniques and learning how to implement with those ideas about growth mindset in my mind just drove that home for me." Examining the qualitative data for Participant 25 in combination with the TSES quantitative data which demonstrated the Growth Mindset Instructional Strategies subscale was the largest increase in mean self-efficacy score for the subpopulation provides additional understanding about the change in her self-efficacy source related to mastery learning experiences being a source for her self-efficacy belief improvement. According to Bandura (1997), mastery experiences are the most powerful source of influence on teachers' self-efficacy beliefs.

Video observations of expert ETs use growth mindset instructional practices while conducting an educational therapy session with a student with LD was the only AL activity participants did not mention. A possible explanation for this AL activity not being identified as helpful in developing participants' self-efficacy beliefs is that the expert ETs could be considered by the observers as mastery models rather than coping models (Tchannen-Moran & Chen, 2014). Coping models, those who the observers see struggle through problems until they reach a successful end, are more likely to boost the confidence of observers than mastery models, those who infrequently make mistakes or act as though they never make them (Tschannen-Moran & Chen, 2014). According to Tschannan-Moran and Chen (2014), a source of self-efficacy is observing others, but observing others who are coping models rather than mastery models.

changes to the RETC. Another approach to identifying barriers and facilitators that affected participants' self-efficacy beliefs was to ask participants what changes could be made in

the RETC that would help them to implement instructional practices to develop a growth mindset in students with LD. Two participants, Participant 10 and Participant 13 indicated that they would not recommend any changes. For example, Participant 13 said, "I don't think there is anything. We spent a lot of time on it [growth mindset], and we were able to discuss and collaborate together and hear everybody, so I don't know that there was anything else we could have done." It is possible that Participant 10 and Participant 13 did not make any recommendations for changes to the RETC because they had the highest post-intervention self-efficacy belief scores in the subset of the sample population.

Participant 25, the participant with an overall TSES (Tschannen-Moran & Hoy, 2001) post-intervention self-efficacy belief score below the population mean, suggested including more direct instruction in the RETC. She said,

> Well, the A-type personality in me wants very specific bullets, this is what you need to do, and this is what you need to do, and this is what you need to do. And I can see the value and non-value in that. More direct instruction for somebody like me who is not coming with a background in mindsets. Maybe a little more direct examples and illustrations from the instructors. It took me a while to grasp some of the concepts, but by the end of the week, I was coming around.

Along similar lines, Participant 5 recommended more videos and introducing the mindset information earlier during the course. For Participant 5 and Participant 25, AL activities that provided verbal persuasion that provide content knowledge or new instructional strategies, as well as claims about the usefulness of the knowledge or instructional strategies (Tschannen-Moran & McMaster, 2009) would have been helpful to develop their self-efficacy beliefs further.

projected use of growth mindset instructional practices. Examining participants' projected use of growth mindset instructional practices shed light on participants' sense-making within the RETC, defined as what stimuli they notice and how they interpret stimuli (Spillane et al., 2002). Furthermore, participants' explanations for how the growth mindset instructional practices will be implemented within instruction can also provide a representation of participants' self-efficacy. When asked to describe their beliefs about the effectiveness of specific instructional strategies to develop a growth mindset in students with LD, Participant 5 and 25 indicated their belief in the effectiveness of teaching students that intelligence is malleable. For example, Participant 5 said, "Well, I believe that you can teach them that their brains are changeable and get that message out at every level, pre-K all the way up that it will help students with LD to become world changers." Rather than specific growth mindset instructional strategies, Participant 10 and 13 focused their answers more on the process of using the strategies rather than the strategies themselves. Participant 13 said, "The strategies have to be very intentional, but I believe very strongly in them. The research science shows it, so why not apply strategies." Participant 10 indicated, "I say with consistency they [growth mindset instructional strategies] can be very effective. If it is personalized to the student and done with consistency, it can be highly effective to develop growth mindsets in students with LD." Participants' responses indicated value for the content knowledge of mindset information as well as perceptions of competency for implementing the growth mindset instructional strategies.

growth mindset instructional strategies. Regarding which instructional strategies participants indicated they would implement to facilitate a growth mindset in their students, Participant 25 and 13 stated they would praise their student for their effort. Illustratively, Participant 25 said, "For the student I have in mind, to really help him redefine what effort is and

why it's not an ending but a beginning." Participant 13 indicated she anticipated helping her student learn from mistakes, "Specific questioning, open-ended questioning about challenge, like helping students learn from their mistakes, and just praising students for effort and reiterate the scientific background behind it that shows its effective." Participant 10 also indicated she would help her students to reframe mistakes. She said, "Trying to teach them to change their perspective about mistakes. Having a conversation and dialogue with them and helping them to change their perspective." Participant 5 expressed that she would facilitate a student's growth mindset by teaching the student about the malleability of the brain. Participant 10 indicated a change in her thinking when she stated,

> "I think fundamentally the biggest takeaway has been learning and understanding that the brain can change."

Participant 5 stated the benefit of the training in growth mindset instructional practices when she replied:

> During reading instruction using process praise, I actually saw that happen last night with my son on the phone. He hasn't wanted to talk to me too much, but last night I started pointing out how he has been working really hard on reading and then wanted to talk to me some more. And so I'm like, that's process praise.

Providing process feedback was the instructional strategy the four participants indicated they envisioned integrating during reading instruction to help students with LD develop a growth mindset. Participant 13 stated:

> Recalling their progress and where they began and showing them how they improved. Helping them track their progress with their own writing and reading. Yes, the process

praise that focuses on effort. I have no doubt in my mind that I will be able to implement that with students.

Interestingly, there was consistency between the written and verbal responses in comparing participants' responses in their written reflections to their interview responses about use of growth mindset practices. For example, in written reflections number three, five, and six, Participant 25 noted the use of process praise and brain malleability as instructional strategies she would use to develop a student's growth mindset. She also verbally indicated the intended use of these two strategies during her interview. She indicated that she envisioned "giving feedback that focused on effort and not student characteristics" and "teaching students that intelligence is malleable." Similar alignment between the other three participants written and verbal qualitative was also noted. The similarity noted in participants' artifact responses and the interview in combination with participants' responses to the three interview questions about the projected use of growth mindset instructional practices sheds light on how participation in the RETC facilitated educational therapists' self-efficacy beliefs, the dependent variable of interest in research question four (RQ 4).

Research Question Five

Intervention Implementation

Analyzing the educational therapists' experiences within the RETC also required an investigation of implementation fidelity, the degree to which the intervention was implemented as designed (Dusenbury et al., 2003). Failure to implement the RETC as intended could lead to erroneous conclusions about observed findings attributed to the intervention. Understanding the educational therapists' observed findings is enhanced by knowledge of dose and quality of

delivery because conclusions about RETC's effectiveness must be framed within this context (Dusenbury et al., 2003).

Dose

In this section, I examined the fifth research question which focused on what observed variations in RETC implementation occur that affect the outcomes of educational therapists' self-efficacy for using instructional practices that focus on developing a growth mindset in students with LD. Descriptive statistics determining the frequency of AL activities provided and received and measures of central tendency for the participants' perception of the quality of the course were examined to measure implementation fidelity. According to the participant and instructor activity logs, all participants and the instructor indicated that the AL activities occurred on the days as scheduled (see Table 19). All participants attended the practicum week. Overall, participant and instructor activity logs indicated that the AL activities were provided and received as designed in the RETC intervention (Table 40).

Table 40

Participants' and Instructor's Active Learning Log Activity and Average Time Reported

Active Learning Activity	Participants' Average Time Reported	Instructor's Average Time Reported
Observation of expert ETs	4 hours and 42 minutes	4 hours and 50 minutes
Role-play in simulated situations while being observed	5 hours and 7 minutes	5 hours and 10 minutes
Participate in small group discussions	4 hours	4 hours
Read, watch, and write about mindset information	7 hours and 9 minutes	7 hours
Total active learning hours	20 hours and 58 minutes	21 hours

Perceptions of Quality

To examine educational therapists' perception of the quality of the course, descriptive statistics were used to analyze the IDEA Diagnostic Feedback$_{2016}$ (IDEA DF$_{2016}$) quantitative data. The IDEA DF2$_{016}$ had a high internal consistency with an overall alpha = 0.93. Table 41 demonstrates the measures of central tendency for the IDEA DF$_{2016.}$

Table 41

Summary of Means, Standard Deviations, Range of Scores, and Rating Category Descriptive for the IDEA Diagnostic Feedback$_{2016}$ Instrument Subscales

Survey Item	*M* (*SD*)	Range		Rating Category Descriptive
		Minimum	Maximum	
Teaching Methods	4.4 (0.5)	2.5	5.0	"Frequently"
Learning Objectives	3.7 (0.7)	2.4	5.0	"Moderate progress"
Course Characteristics	3.6 (0.6)	3.0	5.0	"About average"
Student Characteristics	3.9 (0.8)	1.2	5.0	"In-between"
Overall Summary	4.6 (0.6)	2.5	5.0	"More true than false"

Participants' highest perceptions of the quality of the RETC as measured by the IDEA DF$_{2016}$ (Li et al., 2016) were in the Teaching Methods subscale (*M* = 4.4) and the Overall Summary subscale (*M* = 4.6). Twenty-six participants (87%) provided a rating of 4.0 or higher on the Teaching Methods subscale indicating the educational therapists perceived the RETC instructors and course were effective in providing content information and instructional strategies related to growth mindset. Twenty-seven participants (90%) gave a rating of 4.0 or higher on the Overall Summary subscale which indicated the participants perceived the instructors and course as excellent. Of the five IDEA DF$_{2016}$ subscales, participants' perceptions relative to the Course Characteristics subscale which addresses the amount of coursework and

difficulty of subject matter in comparison to other courses participants have taken had the lowest mean score ($M = 3.6$). The low mean score for the Course Characteristic subscale aligns with the qualitative data from the open-ended responses on the IDEA DF_{2016} in which six participants out of the twenty-two who responded noted that the course content was challenging. Further examination of the IDEA DF2016 data from a qualitative perspective offers additional insight into participants' perceptions of the quality of the RETC.

In addition to completing the IDEA DF_{2016} Likert-scale survey questions, twenty-two participants (73%) provided written comments on the open-ended portion of the IDEA DF_{2016} survey. An analysis of the responses yielded two emergent themes and seven coding categories. The first emergent theme of *Course Content* encompassed the course content and activities and had six codes. Two of the six coding categories could be considered more negative perceptions of the quality of the RETC. The coding category of *Challenging* includes participants' responses that indicated the coursework was challenging or there was too much work. For example, participant 20 wrote, "It [RETC] was a very challenging, fast-paced course." Participant 3 indicated that there was, "Way too much work after class during residency." The coding category of *Overemphasis on Mindset* reflects participants' responses that communicated a desire to balance the mindset information with technique implementation. For example, Participant 13 wrote,

> "While I am grateful we did spend a good bit of time on growth mindset, there might have been a better balance between it and practicing techniques."

The remaining four coding categories within the *Course Content* theme could be considered more positive perceptions of the quality of the RETC. The coding categories of *Content Knowledge* and *Confidence* include participants' responses that suggested new

knowledge was learned or their confidence was built. One participant, Participant 15, indicated both knowledge and confidence had been improved. She said, "As I complete this course, I feel confident in my new learned skills as an educational therapist. I learned so much from my class experiences." The coding category of *Motivating* reflects participants' comments that indicated the course motivated them to use the knowledge or to continue learning. Related to research question one and whether the RETC increased an ET's content knowledge of student mindset information, Participant 4 indicated, "I am excited about taking what I've learned and starting a brand new program at our school." Also, Participant 20 said, "I look forward to taking this knowledge back and helping to change the lives of several students. I look forward to Level II training." The last coding category identified, *Beneficial*, includes participants' comments that reflect value or enjoyment in the RETC. For example, Participant 5 indicated, "I enjoyed pushing myself to press on, dig in and go the extra mile sometimes."

The second theme of *Instructor Quality* encompassed participants' perceptions about the RETC instructors. The theme *Instructor Quality* included participants' comments about the instructors' delivery of content and interaction with participants. Illustratively, Participant 9 said, "Your [instructors] enthusiasm and presentation skills are engaging." Table 42 indicates participants' responses in the themes and categories.

Table 42

Participant open-ended comments on the IDEA DF$_{2016}$

Theme and Code	Participant
Theme 1 – Course Content	
Challenging	3, 4, 5, 7, 24, 25
Overemphasis on Mindset	3, 13, 17, 29, 30
Content Knowledge	9, 12, 15, 18, 20
Confidence	9, 12, 15, 21
Motivating	4, 5, 11, 16, 17, 19, 20, 24, 25
Beneficial	5, 6, 7, 9, 12, 17, 20, 25, 28, 30
Theme 2 – Instructor Quality	4, 6, 9, 15, 21, 28

Three participants (14%) provided negative only open-ended comments on the IDEA DF$_{2016}$. Overall, the majority of participants who provided open-ended comments offered feedback about their perceptions of the quality of the RETC that was either all positive (50%) or a combination of negative (e.g., challenging coursework and balancing mindset information with technique implementation) and positive (36%). The examination of the IDEA DF$_{2016}$ qualitative data taken in consideration with the findings for the IDEA DF$_{2016}$ quantitative analysis suggests that participants in the intervention demonstrated a positive perception of the quality of RETC.

Implications for Practice

The RETC intervention aimed to change educational therapists' knowledge, beliefs, and instructional practices related to a growth mindset. The findings from this study align with other research on professional development that indicates it is possible to change educators' content knowledge, self-efficacy beliefs, and instructional behavior (Garet et al., 2008; Neuman & Cunningham, 2009; Ross & Bruce, 2007). During the pre-intervention RTOP observations, instructors did not note the use of growth mindset instructional strategies during reading instruction. However, instructor notes from the post-intervention RTOP observations reflected ETs' implementation of: (a) of process feedback and brain malleability (e.g., ET told a

participant role-playing a student with LD, "You did a great job struggling through identifying syllable types. You grew some dendrites."), and (b) elicit student explanation of growth mindset benefits (e.g., ET said to a participant role-playing a student with LD, "Was there a mistake today that helped you grow?" The participant said, "I tried to recall the keyword page in my mind, but I struggled to recall the spelling patterns. My struggle showed me I need to use a different strategy than repeating the keywords to myself to remember the patterns.")

According to Nueman and Cunningham (2009), professional development that provides content and pedagogical knowledge may best support the ability of educators to apply knowledge in practice. Within the LD community, children are children whether in a private or public school setting, based on the well-documented persistent reading achievement gap data for students with LD compared to their public and private school peers without LD (NAEP, 2015; NAEP 2017; Schulte et al., 2016). According to the research LD teachers are teachers, as research indicates that there are no significant differences between private and public school special educator classroom processes and instruction (Eigenbrood, 2005; O'Brien & Pianta, 2010). Therefore, the findings from this study, which demonstrated meaningful changes in knowledge, efficacy, and practice, could be applied to future educational therapist training courses and to other LD professional learning providers who work with public and charter school educators.

This study had a small population sample size and limited its scope to educational therapists. However, the findings from this study suggest that providing educators growth mindset instructional practices can guide educators on how to implement the practices during reading instruction. These findings are relevant for both private and public school educators. Mindsets, a non-cognitive student factor that contributes to academic achievement outcomes are

malleable (Blackwell et al., 2007; Dweck et al., 2011; Paunesku et al., 2015; Petscher et al., 2017). Based on the recent national survey findings from registered users of Education Week, over 600 K-12 public and private school educators reported with 98% agreement that they believed building students' growth mindsets would enhance students' learning and yet only 20% indicated confidence in their capabilities to facilitate a growth mindset in their student (Yettick et al., 2016).

Intended and Unintended Outcomes

Statistically significant changes were demonstrated in all three of the study's dependent variables. Additionally, the magnitude of treatment effect size for change in participants' content knowledge of student mindset information ($d = 3.19$), self-efficacy beliefs ($d = 1.99$) and use of growth mindset instructional practices ($d = 5.45$) are considered very large. Although participants' overall self-efficacy beliefs were high, they reflected the smallest magnitude of treatment effect size across dependent variables. Guskey (2002) notes that efficacy beliefs change in response to improved student outcomes as a result of changed educator practices. Therefore, it is possible that given more time and job-embedded practice with students, the ETs' efficacy beliefs would improve. However, the Growth Mindset Instructional Strategies subscale demonstrated the largest treatment effect size ($d = 2.26$) within the self-efficacy constructs measured. The variations in improvement across the self-efficacy subscales reflect Bandura's (1997) position that self-efficacy is not a global trait but a differentiated set of beliefs associated with distinct areas of functioning (Bandura, 1997).

Based on the significant difference between ETs' pre- and post-intervention mindset scores as measured by Dweck and Henderson's (1989) Theories of Intelligence Scale, an unintended outcome of this intervention was an improvement in educational therapists' growth

mindset beliefs. This finding is similar to other research findings on growth mindset. Carol Dweck's (2000) work shows that teaching about growth mindset changes an individual's belief about their own ability towards a growth mindset. This next section discusses the implications for those who serve and support educational therapists and other professional learning providers who work with educators who provide academic intervention to students with LD.

AL Activities are Sources of Self-Efficacy

Informed and grounded in social cognitive theory and triadic reciprocal determinism (Bandura, 1986), the AL activities embedded in the design of the RETC can act as sources of self-efficacy for educational therapists. Self-efficacy beliefs are an individual's perceived competency to attain a desired level of performance in a given behavior or action (Bandura, 1977). In particular, based on the quantitative and qualitative analyses in this study, mastery learning experiences may be particularly helpful for educational therapists who have low self-efficacy beliefs. Participants with self-efficacy scores below the mean population pre- and post-intervention scores, such as Participant 5 and 25, indicated that role-playing and practicing the growth mindset instructional techniques during reading instruction noted role-playing as helpful in developing their efficacy beliefs. Illustratively, Participant 5 said in her interview, "that [role-playing] really kind of cemented the whole thing. I thought, yeah, I am getting this, okay."

Bandura (1986) posits that mastery experiences are the most potent sources of self-efficacy beliefs. Efficacy beliefs are improved if an educator perceives his or her teaching performance to be successful, which then contributes to anticipating future performances will likely be successful (Bandura, 1997). Guskey (2002) extends Bandura's (19866) ideas about self-efficacy suggesting that efficacy beliefs are reinforced when educators observe changes in student learning outcomes. Offering professional learning that incorporates role-playing with

observation and feedback can provide a source for self-efficacy beliefs that could transform educators' instructional practices. Additionally, facilitating mastery learning experiences in job-embedded contexts through monthly coaching and mentoring throughout the year, while educational therapists provide reading intervention to students with LD, is another source for developing self-efficacy beliefs.

Future Educational Therapist Certification Courses

Although the study's population sample included both novice educators (e.g., those with less than five years of K-12 teaching experience) and experienced educators (e.g., those with more than 10 years of K-12 teaching experience), the participants were all novice educational therapists taking the Level I educational therapist certification training. Based on the study's findings, providing novice educational therapists with growth mindset information and practice using a discrete set of growth mindset instructional strategies can positively affect educators' teaching practices. The findings from this study have implications for other levels of educational therapist certification training. Ideally, this intervention would be applied in a larger scale setting such as including mindset information in the Learning Development Center's Level II and Level III educational therapist professional development certification training. Based on the needs assessment findings (Barbour, 2017) not only did Level II and Level III trained educational therapists express an interest in learning how to change students' fixed mindset, but they also expressed an interest in how to communicate the mindset and academic achievement link and sources of mindset information.

Based on the study's findings, another implication for future educational therapist certification courses is teaching educational therapists how to implement growth mindset instructional practices during the math instructional component. In the extant literature,

research linking mindset intervention to mathematics achievement indicates a positive correlation between developing students' growth mindset and improved mathematics outcomes (Blackwell et al., 2007; Claro et al., 2016; Paunesku et al., 2015; Yeager et al., 2016). According to Yeager et al. (2016), growth mindset interventions are not tied to specific academic content but instead address challenges that learners face in any context which enables the application of their use across academic domains.

Limitations

There were several limitations to this study including sample size, intervention length, the absence of a comparison group, and biases. The study's population sample size consisted of 30 educational therapists who predominately worked in the Southeastern region of the United States. While the decision to use a convenience sample of educational therapists attending the educational therapist certification training in one state was purposeful based on my geographical location, a larger sample size is most likely needed for generalizability. A larger sample of educational therapists from other training locations around the United States might reveal more information about the usefulness of revising the educational therapist certification training to include mindset information and enhance the generalizability of the findings. Additionally, it is likely that the small sample size impacted the non-significance finding for Hypothesis 2, that educational therapists' content knowledge of student mindset information is positively correlated with more positive self-efficacy beliefs for the use of growth mindset instructional practices. Inferential statistic should be rerun with a larger sample size in future studies. Although the educational therapists all held growth mindset beliefs, they had diverse backgrounds in terms of highest degree earned, years of teaching experience in K-12 education, and years teaching reading to students with LD. No statistical differences were apparent between the participant

characteristics, but the small sample size made it difficult to detect potential differences based on participant characteristics in this study.

The RETC was conducted over a one-week practicum in which approximately 45% of the total practicum hours encompassed the AL activities related to mindset information. Although changes were noted in the dependent variables of interest, the educational therapists' content knowledge of student mindset information, self-efficacy beliefs, and use of growth mindset instructional practices, this time period may not be enough time to measure a predictive positive relationship between these dependent variables. Effective PD designs provide sustained, job-embedded professional learning opportunities (Darling-Hammond et al., 2017; Garet et al., 2001). Therefore, another limitation of the one-week practicum RETC is that it did not include the opportunity for ETs to practice implementing growth mindset instructional strategies during reading instruction with students with LD in their job-embedded contexts. Future iterations of the RETC should include coaching and mentoring that occur at least one time a month in the ET's job-embedded context. Additionally, an essential empirical question that could be asked in non-longitudinal research designs is whether the intervention effects will persist beyond a brief time or beyond the study's duration (Gersten, Baker, & Lloyd, 2000). A limitation of this study is that the research design did not re-examine the effects of the RETC components on the educational therapists' knowledge, efficacy beliefs, and instructional practices after a delayed period of six or more months beyond the study's duration to determine any lasting effects.

Both RETC instructors were experienced ET certification course instructors, dyslexia specialists, and have experience providing workshops and webinars on mindset topics. However, it is possible that the instructors held biases that impacted data analysis and data collection, specifically the RTOP for both instructors as that was the only data collection the

second instructor provided. As dyslexia specialists and knowledgeable in mindset information, the instructors may have held higher expectations for participants' use of growth mindset instructional practices than was reasonable to be expected. Thus, these biases may have lowered the pre-intervention RTOP scores. Additionally, based on my leadership role in LDC, there was the potential for subject bias in the way participants completed the self-efficacy survey, the IDEA DF_{2016}, and responded to interview questions. The responses the participants provided might reflect responses they believed I expected or communicated during the intervention.

Lastly, the absence of a comparison group indicated that the study's results may not be generalizable to other educational therapists in different contexts. Comparing the outcomes for educational therapists in the RETC to a matched control group would increase the external validity of these results (Shadish et al., 2002). To establish the study's generalizability, the sample size would need to be approximately double or more than double the current sample size (Faul, Erdfelder, Lang, & Buchner, 2007). Professional development studies with external validity using treatment and control groups with sample populations ranging from 30 to 93 elementary educators per group have demonstrated treatment effect sizes ranging from .37 to .59 for changes in teacher knowledge, self-efficacy beliefs, and use of new reading instructional practices (Garet et al., 2008; Ross & Bruce, 2007).

Future Research

In this study, the association between content knowledge of mindset information, self-efficacy beliefs, and use of growth mindset instructional practices did not demonstrate statistical significance. To further examine the claims of causal inference and the interaction between educational therapists' personal characteristics (e.g., knowledge and self-efficacy beliefs) and behaviors (e.g., use of growth mindset instructional practices) within the framework of triadic

reciprocal determinism (Bandura, 1986) future research needs to occur without the aforementioned limitations. Additionally, there is increasing demand from various stakeholders including policymakers and funders who want to know about the value of educators' professional learning and the impact of the professional development activities on educators' practice (Guskey, 2014). Additional measurements such as a delayed posttest measure of educational therapist' self-efficacy and follow-up observations of educational therapists providing reading intervention to students with LD in job-embedded contexts should be used before the completion of future iterations of the RETC intervention to determine the long-term effects on educational therapists' self-efficacy beliefs and instructional practices related to a growth mindset.

Increasingly, the primary purpose of professional learning is to not only improve educator instructional practice but also to impact student results positively (Learning Forward, 2011). Therefore, because professional development can alter educators' instructional behaviors, which in turn can alter student performance (Yoon et al., 2007), future studies to examine the effect of educational therapists' use of growth mindset instructional practices on the reading achievement of students with LD is necessary to determine the effect of those practices on student learning outcomes. Educational therapists annually submit student achievement data to the Learning Development Center. Hence, it is possible to examine the reading achievement outcomes of students with LD from educational therapists who participated in the 2018 RETC compared educational therapists who did not participate in the 2018 RETC study. Because mindsets, a non-cognitive student factor that contributes to academic achievement outcomes, are malleable and are linked with achievement outcomes (Blackwell et al., 2007; Dweck et al., 2011; Paunesku et al., 2015; Petscher et al., 2017), a future study can facilitate an examination of

changes in educator knowledge, efficacy, and practice related to developing a growth mindset in students with LD on student reading achievement outcomes. The potential benefits of future research that focuses on educators' use of growth mindset instructional practices and student reading achievement outcomes may offer evidenced-based guidance for instructional practices that may contribute to narrowing the reading achievement gap for students with LD.

Conclusion and Implications

This research study examined the outcomes and experiences of 30 educational therapists participating in a revised educational therapy course that incorporated mindset information into active learning activities during a face-to-face practicum week. The participants demonstrated statistically significant changes in their content knowledge of student mindset information, self-efficacy beliefs for the use of growth mindset instructional practices, and use of growth mindset instructional practices from pre- to post-intervention. Furthermore, the magnitude of treatment effect is considered very large across all three dependent variables. Qualitative evidence helps to explain the quantitative findings and suggests that the educational therapists perceived the active learning activities, especially mastery learning experiences, as sources of developing their own self-efficacy. From the special educators' perspective, this finding supports the malleability of teachers' beliefs in their professional capacities (Ross & Bruce, 2007), in particular when mastery learning experiences are involved (Bandura, 1986). Going forward, the Learning Development Center will intentionally increase active learning opportunities within its educational therapists' certification courses, both the quantity and quality by incorporating practice with students with LD during the practicum week and in job-embedded contexts.

Additionally, the RETC had a positive impact on educational therapists' mindset beliefs. This finding in combination with Dweck's (2000) research that indicates teaching individuals

about growth mindset changes an individual's belief about their own ability towards a growth mindset has positive implications for including mindset information in future educational therapist certification training regardless of the type of mindset belief held. Revising the existing Level II and Level III educational therapist certification training to provide information on students' growth mindset and positively impact educational therapists' mindset is another way to apply the RETC study's findings meaningfully. Educators with a growth mindset tend to utilize more direct instruction in their teaching, establish instructional goals to help students develop problem-solving skills (Swann & Synder, 1980), and provide process-oriented feedback that enhances students' perseverance and effort (Rattan et al., 2012). Because students with LD benefit from process feedback, and direct instruction in self-regulation and self-directed reading strategies (Vaughn et al., 2000), helping educators to develop a growth mindset is important.

Grounded in the social cognitive theory of learning (Bandura, 1986), this research study indicated that providing educational therapists with an understanding of growth mindsets and engaging in mastery learning experiences relative to growth mindset instructional practices can positively impact educators' capacity to incorporate growth mindset instructional practices during reading instruction with students with learning disabilities. This intervention was able to positively affect educational therapists' knowledge, self-efficacy beliefs, and instructional practices related to growth mindset. Therefore, the active learning components relative to mindset information should be considered for inclusion in future educational therapists' certification training courses as an approach to address the non-cognitive beliefs affecting the reading achievement of students with learning disabilities.

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Appendix A

EDUCATIONAL THERAPIST'S SURVEY

Code:

Educational Therapist Name:_____

Date: _____

1. If you are a school-based educational therapist, please indicate the type of private school:

_____ Religious

_____ Non-religious

2. Please indicate the enrollment size of the private school:

_____ Less than 200 students

_____ 200 – 499 students

_____ 500+ students

3. If you are a non-school based educational therapist, please indicate where the majority of your students attend school:

_____ Private religious

_____ Private non-religious

4. What is the highest Level of NILD Training you have completed?

_____ Level I

_____ Level II

_____ Level III

5. How many years have you been providing educational therapy?

_____ 0-5 years

_____ 6-10 years

_____ 10+ years

6. Over the past two years, on average, how many different educational therapy students have you worked with during the school year?

_____ 1-3

_____ 4-6

_____ 6+

People have different beliefs about intelligence and ability. Your personal beliefs about your own intelligence are called mindsets. Read each sentence below and circle the number that shows how much you agree with it. There are no right or wrong answers.

7. You have a certain amount of intelligence and you really cannot do much to change it.

1	2	3	4	5	6
Strongly Agree	Agree	Mostly Agree	Mostly Disagree	Disagree	Strongly Disagree

8. Your intelligence is something about you that you cannot change very much.

1	2	3	4	5	6
Strongly Agree	Agree	Mostly Agree	Mostly Disagree	Disagree	Strongly Disagree

9. You can learn new things, but you can't really change your basic intelligence.

1	2	3	4	5	6
Strongly Agree	Agree	Mostly Agree	Mostly Disagree	Disagree	Strongly Disagree

Please complete the rest of the survey based on your current 4th, 5th, and 6th grade students with reading difficulties enrolled in educational therapy.

Students also have beliefs about intelligence and ability. Some students view intelligence as static. This is called a fixed mindset. Some students view intelligence as malleable. This is called a growth mindset. Please circle the number that best describes your knowledge about your students' mindsets.

10. I am aware there are different type of mindsets my students may hold, either growth or fixed mindsets.

1	2	3	4	5	6
Strongly Disagree	Disagree	Mostly Disagree	Mostly Agree	Agree	Strongly Agree

11. I believe that students holding growth mindsets believe their intelligence is something they can change.

1	2	3	4	5	6
Strongly Disagree	Disagree	Mostly Disagree	Mostly Agree	Agree	Strongly Agree

12. I believe that students holding fixed mindsets believe their intelligence is something that they can't change.

1	2	3	4	5	6
Strongly Disagree	Disagree	Mostly Disagree	Mostly Agree	Agree	Strongly Agree

13. Based on my students' engagement with the educational therapy techniques, I can identify my students' mindsets as fixed or growth.

1	2	3	4	5	6
Strongly Agree	Agree	Mostly Agree	Mostly Disagree	Disagree	Strongly Disagree

14. My NILD training has provided me with information about students' mindsets.

1	2	3	4	5	6
Strongly Agree	Agree	Mostly Agree	Mostly Disagree	Disagree	Strongly Disagree

15. If NILD did not provide you with information about students' mindsets, what resource provided you information about students' mindsets?

_____

16. What additional information would you like to know concerning your students' mindset beliefs?

_____
_____
_____

Self-efficacy is the belief about one's ability to perform a particular task. Please answer the following questions about <u>your</u> efficacy to impact your students' mindset and reading self-efficacy.

17. I am able to help students with a fixed mindset develop a growth mindset.

1	2	3	4	5	6
Strongly Agree	Agree	Mostly Agree	Mostly Disagree	Disagree	Strongly Disagree

18. I can develop my students' beliefs that they can learn phonics.

1	2	3	4	5	6
Strongly Agree	Agree	Mostly Agree	Mostly Disagree	Disagree	Strongly Disagree

19. I can develop my students' beliefs that they can develop phonological awareness.

1	2	3	4	5	6
Strongly Agree	Agree	Mostly Agree	Mostly Disagree	Disagree	Strongly Disagree

20. I can develop my students' beliefs that they can develop reading fluency skills.

1	2	3	4	5	6
Strongly Agree	Agree	Mostly Agree	Mostly Disagree	Disagree	Strongly Disagree

21. I can develop my students' beliefs that they can learn new vocabulary.

1	2	3	4	5	6
Strongly Agree	Agree	Mostly Agree	Mostly Disagree	Disagree	Strongly Disagree

22. I can develop my students' beliefs that they can learn reading comprehension strategies.

1	2	3	4	5	6
Strongly Agree	Agree	Mostly Agree	Mostly Disagree	Disagree	Strongly Disagree

23. I can improve my students' reading self-efficacy beliefs.

1	2	3	4	5	6
Strongly Agree	Agree	Mostly Agree	Mostly Disagree	Disagree	Strongly Disagree

Thank you for completing the survey!

Appendix B

Mindset Knowledge Inventory Key

I. Mindset Definition and Prevalence of Mindset Types

1. Mindset is a person's (implicit) beliefs about the malleability of intelligence.

   (a) implicit
   (b) explicit
   (c) personal
   (d) unique

2. Approximately (40) % of students hold growth mindsets, (40)% hold fixed mindsets, and (20)% hold mixed or neutral mindsets.

   (a) 25, 60, and 15
   (b) 40, 40, and 20
   (c) 20, 60, and 40
   (d) 30, 30, and 40

3. Students holding growth mindsets believe their intelligence (can change).

   (a) is inherited
   (b) is a static trait
   (c) stems from their experiences
   (c) can change

4. Students holding fixed mindsets believe their intelligence (is a static trait).

   (a) is inherited
   (b) is a static trait
   (c) stems from their experiences
   (d) can change

5. (Incremental) mindset is synonymous with growth mindset.

   (a) incremental
   (b) entity
   (c) static
   (d) flexible

6. (Entity) mindset is synonymous with fixed mindset.

   (a) incremental
   (b) entity
   (c) static
   (d) flexible

7. Incremental mindset is the belief that individuals have (some degree of control over their intelligence).

   (a) complete degree of control over their intelligence
   (b) some degree of control over their intelligence
   (c) little degree of control over their intelligence
   (d) no degree of control over their intelligence

8. Entity mindset is the belief that intelligence is predetermined by (genetics).

   (a) parental interactions
   (b) genetics
   (c) school interactions
   (d) personality

II. Sources of Mindsets

9. Which type of teacher feedback helps students to develop a growth mindset? (Your hard work is evident)

   (a) This activity is too easy for you.
   (b) I'm proud of you.
   (c) Your hard work is evident.
   (d) You are very good at this.

10. Which is a source for developing students' mindset? (Strategy-oriented praise -"You found a good way to do it.")

    (a) person-oriented praise ("You are very good at this.")
    (b) past accomplishments (good grades)
    (c) student's physiological state in response to an activity (increased heart rate when facing a challenging learning task)
    (d) strategy-oriented praise ("You found a good way to do it.")

11. Which is not a source for developing a student's mindset? (student's grades)

    (a) teacher's mindset
    (b) teacher's praise
    (c) student's grades
    (d) parent's praise

III. Learning Goals Associated with Mindsets

12. In general, (performance) learning goals are associated with fixed mindsets.

    (a) personal
    (b) performance
    (c) mastery
    (d) private

13. Performance-approach learning goals focus on (demonstrating) competency.

    (a) developing
    (b) demonstrating
    (c) achieving
    (d) avoiding

14. Performance-avoidance learning goals have been associated with (maladaptive) patterns of learning.

    (a) typical
    (b) unique
    (c) maladaptive
    (d) adaptive

15. Mastery learning goals focus on (developing) competency.

    (a) developing
    (b) demonstrating
    (c) achieving
    (d) avoiding

16. Performance-approach learning goals have been associated with (adaptive) patterns of learning.
    (a) typical

(b) unique
(c) maladaptive
(d) adaptive

17. In general, (mastery) learning goals are associated with growth mindsets.

(a) performance
(b) personal
(c) private
(d) mastery

IV. Effects of Mindsets on Learning and Achievement

18. There is a (reciprocal) interaction between mindsets, self-efficacy, and achievement.

(a) inverse
(b) reciprocal
(c) negative
(d) positive

19. Students holding a growth mindset are (more likely) to adopt mastery learning goals.

(a) less likely
(b) equally likely
(c) more likely
(d) twice as likely

20. Students holding a fixed mindset are (more likely) to have low self-efficacy compared to their peers holding a growth mindset.

(a) less likely
(b) equally likely
(c) more likely
(d) twice as likely

21. Students holding a growth mindset have (adaptive) patterns of cognition, affect and behavior.

(a) typical
(b) unique
(c) maladaptive
(d) adaptive

22. Teachers' mindset affects their (instructional approaches).

    (a) job satisfaction
    (b) use of technology in the classroom
    (c) collaboration with peers
    (d) instructional approaches

23. Teachers with growth mindsets believe they can help students develop their intellectual ability by (learning new skills, acquiring knowledge, and expending effort).

    (a) showing them exemplars of past students' work
    (b) discussing students' goals, career interests, and tracking for advance placement classes
    (c) learning new skills, acquiring knowledge, and expending effort
    (d) discussing famous people who struggled in school but became inventors, writers, and scientists

24. Teachers with fixed mindsets hold (low) expectations for students.

    (a) low
    (b) high
    (c) few
    (d) many

25. Teachers with fixed mindsets are (less) likely to implement strategies to help struggling learners than to help typically developing learners.
    (a) less
    (b) more
    (c) equally
    (d) somewhat

People have different beliefs about the intelligence and ability. Your personal beliefs about your own intelligence are called mindsets. Read each sentence below and circle the number that shows how much you agree with it. There are no right or wrong answers.

26. You have a certain amount of intelligence and you really cannot do much to change it.

1	2	3	4	5	6
Strongly Agree	Agree	Mostly Agree	Mostly Disagree	Disagree	Strongly Disagree

27. Your intelligence is something about you that you cannot change very much.

1	2	3	4	5	6
Strongly Agree	Agree	Mostly Agree	Mostly Disagree	Disagree	Strongly Disagree

28. You can learn new things, but you can't really change your basic intelligence.

1	2	3	4	5	6
Strongly Agree	Agree	Mostly Agree	Mostly Disagree	Disagree	Strongly Disagree

Appendix C

Teachers' Sense of Efficacy Scale

Directions: Please indicate your opinion about each of the questions below by marking any One of the nine responses in the columns on the right side, ranging from (1) "None at All" to (9) "A Great Deal" as each represents a degree on the continuum.

Please respond to each of the questions by considering the combination of your current ability, resources, and opportunity to do each of the following in your present position.

Questions	Not at All		Very Little		Some Degree		Quite a Bit		A Great Deal
1. How much can you do to get through to the most difficult students?	1	2	3	4	5	6	7	8	9
2. How much can you do to help your students think critically?	1	2	3	4	5	6	7	8	9
3. How much can you do to motivate students who show low interest in school work?	1	2	3	4	5	6	7	8	9
4. How much can you do to get students to believe they can do well in school work?	1	2	3	4	5	6	7	8	9
5. How well can you respond to difficult questions from your students?	1	2	3	4	5	6	7	8	9
6. How much can you do to help your students value learning?	1	2	3	4	5	6	7	8	9
7. How much can you do to gauge student comprehension of what you have taught?	1	2	3	4	5	6	7	8	9
8. To what extent can you craft good questions for your students?	1	2	3	4	5	6	7	8	9
9. How much can you do to foster student creativity?	1	2	3	4	5	6	7	8	9
10. How much can you do to improve the understanding of a student who is failing?	1	2	3	4	5	6	7	8	9

Questions	Not at All		Very Little		Some Degree		Quite a Bit		A Great Deal
11. How much can you do to adjust your lessons to the proper level for individual students?	1	2	3	4	5	6	7	8	9
12. How much can you use a variety of assessment strategies?	1	2	3	4	5	6	7	8	9
13. To what extent can you provide an alternative explanation or example when students are confused?	1	2	3	4	5	6	7	8	9
14. How much can you assist families in helping their children do well in school?	1	2	3	4	5	6	7	8	9
15. How well can you implement alternative strategies in your classroom?	1	2	3	4	5	6	7	8	9
16. How well can you provide appropriate challenges for very capable students?	1	2	3	4	5	6	7	8	9

Please respond to each of the questions by considering the combination of your current ability, resources, and opportunity to implement growth mindset instructional practices in your present position when responding to the items.

Questions	Not at All		Very Little		Some Degree		Quite a Bit		A Great Deal
17. How well can you respond to difficult questions from your students?	1	2	3	4	5	6	7	8	9
18. How much can you gauge student comprehension of what you have taught?	1	2	3	4	5	6	7	8	9
19. To what extent can you craft good questions for your students?	1	2	3	4	5	6	7	8	9
20. How much can you do to adjust your lessons to the proper level for individual students?	1	2	3	4	5	6	7	8	9
21. How much can you use a variety of assessment strategies?	1	2	3	4	5	6	7	8	9
22. To what extent can you provide an alternative explanation or example when students are confused?	1	2	3	4	5	6	7	8	9
23. How well can you implement alternative strategies in your classroom?	1	2	3	4	5	6	7	8	9
24. How well can you provide appropriate challenges for very capable students?	1	2	3	4	5	6	7	8	9

Appendix D

Reformed Teaching Observation Protocol

RTOP: Reformed Teaching Observation Protocol

Teacher Candidate: _____

Observer: _____

Grade Level: _____ Date of Observation: _____

Lesson Plan & Implementation

	Never Occurred				Very Descriptive
1.) Instructional strategies and activities respected students' prior knowledge and the preconceptions inherent therein.	0	1	2	3	4
2.) The lesson was designed to engage students as members of a learning community.	0	1	2	3	4
3.) In this lesson, student exploration preceded formal presentation.	0	1	2	3	4
4.) This lesson encouraged students to seek and value alternative modes of investigation or of problem solving	0	1	2	3	4
5.) The focus and direction of the lesson was often determined by ideas originating with students.	0	1	2	3	4

Content

		Never Occurred				Very Descriptive
Propositional	6.) The lesson involved fundamental concepts of the subject.	0	1	2	3	4
	7.) The lesson promoted strongly coherent conceptual understanding.	0	1	2	3	4
	8.) The teacher had a solid grasp of the subject matter content inherent in the lesson.	0	1	2	3	4

	9.) Elements of abstraction (i.e., symbolic representations, theory building) were encouraged where it was important to do so.	0 1 2 3 4
	10.) Connections with other content disciplines and/ or real world phenomena were explored and valued.	0 1 2 3 4
Procedural Knowledge	11.) Students used a variety of means (models, drawings, graphs, concrete materials, manipulatives, etc.) to represent phenomena.	0 1 2 3 4
	12.) Students made predictions, estimations and/or hypotheses and devised means for testing them.	0 1 2 3 4
	13.) Students were actively engaged in thought-provoking activity that often involved the critical assessment of procedures.	0 1 2 3 4
	14.) Students were reflective about their learning.	0 1 2 3 4
	15.) Intellectual rigor, constructive criticism, and the challenging of ideas were valued.	0 1 2 3 4

Classroom Culture

		Never Occurred Very Descriptive
Communicative Indicators	16.) Students were involved in the communication of their ideas to others using a variety of means and media.	0 1 2 3 4
	17.) The teacher's questions triggered divergent modes of thinking.	0 1 2 3 4
	18.) There was a high proportion of student talk and a significant amount of it occurred between and among students.	0 1 2 3 4
	19.) Student questions and comments often	

	determined the focus and direction of classroom discourse.	0 1 2 3 4
	20.) There was a climate of respect for what others had to say.	0 1 2 3 4
Student/ Teacher Relationships	21.) Active participation of students was encouraged and valued.	0 1 2 3 4
	22.) Students were encouraged to generate conjectures, alternative solution strategies, and ways of interpreting evidence.	0 1 2 3 4
	23.) In general the teacher was patient with students.	0 1 2 3 4
	24. The teacher acted as a resource person, working to support and enhance student investigations.	0 1 2 3 4
	25.) The metaphor "teacher as listener" was very characteristic of this classroom.	0 1 2 3 4

Feedback

Appendix E

Educational Therapist Interview Protocol

Script

Say, "Thank you for agreeing to do this interview. I hope that you will be comfortable being candid with me. I want to understand your experiences in the course.

If you have any questions or concerns at any time and would like to stop the interview, please don't hesitate to let me know. With your permission, I will be recording the session with iRecorder (or OmniJoin) technology that will record audio of our conversation.

The audio file will be transcribed and saved on my computer, which is password protected. I will not be sharing the data with anyone other than the advisors on my dissertation committee. At no time will I share your name or other identifying information. A pseudonym name will be used to protect your identity. This work will be reported in my dissertation.

Do you have any questions before we begin?

I would like to begin by collecting some data about you and your teaching experiences.

Background Data

1. What is the highest degree you have earned?

    - Bachelor's degree
    - Master's degree
    - Doctorate degree

General Teaching Experience

1. How many years have you taught in K-12 education?

    - 0-5
    - 6-10
    - 10+

2. Which grade level have you had the most teaching experience?

3. How many years have you taught students with learning disabilities?

    - 0-5
    - 6-10

- 10+

Prior Training in Mindsets

1. Describe any workshops, courses, webinars, professional development training, or any other training on mindset information you have previously received?

2. How would you describe your familiarity with the concept of growth mindset in K-12 education prior to the start of the RETC?

Interview Questions

The questions are designed to be open-ended, and the prompts will only be used if the ETs do not mention the concept.

1. What barriers or facilitators in the course impacted your belief in your ability to implement instructional practices to develop students' growth mindset?

   Active learning activities (prompt)
   Course content (prompt)
   Course environment – online or practicum (prompt)
   Course instructor (prompt)
   Course materials (prompt)

2. Which course learning activities do you think worked best for you in developing your belief in your ability to use instructional practices to develop students' growth mindset?

   - Discussion posts (prompt)
   - Observing expert ETs (prompt)
   - Readings and presentations (prompt)
   - Reflective journaling (prompt)
   - Role-playing with observations/feedback (prompt)
   - Small group discussions (prompt)

3. Describe your beliefs about the effectiveness of specific instructional strategies to develop growth mindsets in students with LD?

   - Praise students for effort (prompt)
   - Learning from mistakes (prompt)
   - Encourage students to try new strategies (prompt)
   - Teach students intelligence is malleable (prompt)

4. What type of instructional strategies would you implement to facilitate a growth mindset in your students?
    - Praise students for effort (prompt)
    - Learning from mistakes (prompt)
    - Encourage students to try new strategies (prompt)

5. How do you envision integrating instructional practices during reading instruction that develops students' growth mindset?
    - Discussing the use of strategies within learning activities (prompt)
    - Using process feedback in response to mistakes (prompt)
    - Providing process feedback focusing on effort and persistence) (prompt)

6. Do you feel your beliefs about your ability to use instructional practices to develop students' growth mindset have changed as a result of the course? Why or why not?

7. Please tell me what we could change in the course that would help you implement instructional practices to develop students' growth mindsets?

Closing

Say, "Thank you for agreeing to have this interview today. I value your time and thoughtful responses to the questions. If a thought or an idea occurs to you after this interview and you would like to talk again, please feel free to email or call me."

Appendix F

Participant Activity Log

	A	B	C	D
1	DAY	TYPE OF AL ACTIVITY	LENGTH OF AL ACTIVITY (In Minutes)	
2	**Monday**	Observation		
3		Role-Play		
4		Small-Group Discussion		
5		Read, Watch, Write		
6				
7				
8				
9				
10	**Tuesday**	Observation		
11		Role-Play		
12		Small-Group Discussion		
13		Read, Watch, Write		
14				
15				
16				
17				
18				
19				
20	**Wednesday**	Observation		
21		Role-Play		
22		Small-Group Discussion		
23		Read, Watch, Write		
24				
25				
26				
27				
28				
29				
30	**Thursday**	Role-Play		
31		Small-Group Discussion		
32		Read, Watch, Write		
33				
34				
35				
36				
37				
38				
39				
40	**Friday**	Observation		
41		Role-Play		
42		Small-Group Discussion		
43				
44				
45				

Appendix G

IDEA Student Ratings of Instruction Diagnostic Feedback 2016 Instrument

Directions: Please answer the following for your instructor by circling a number:

Describe the frequency of your instructor's teaching procedures.

The Instructor:

	Hardly Ever	Occasionally	Sometimes	Frequently	Almost Always
Found ways to help students answer their own questions	1	2	3	4	5
Helped students to interpret subjective matter from diverse perspectives (e.g., different cultures, religions, genders, political views)	1	2	3	4	5
Encouraged students to reflect on and evaluate what they had learned	1	2	3	4	5
Demonstrated the importance and significance of the subject matter	1	2	3	4	5
Formed teams or groups to facilitate learning	1	2	3	4	5
Made it clear how each topic fit into the course	1	2	3	4	5
Provided meaningful feedback on students' academic performance	1	2	3	4	5
Stimulated students to intellectual effort beyond that required by most courses	1	2	3	4	5
Encouraged students to use multiple resources (e.g. Internet, library holdings, outside experts) to improve understanding	1	2	3	4	5
Explained course material clearly and concisely	1	2	3	4	5
Related course material to real life situations	1	2	3	4	5
Created opportunities for students to apply course content outside the classroom	1	2	3	4	5
Introduced stimulating ideas about the subject	1	2	3	4	5

Involved students in hands on projects such as research, case studies, or life activities	1	2	3	4	5
Inspired students to set and achieve goals which really challenged them	1	2	3	4	5
Asked students to share ideas and experiences with others whose backgrounds and viewpoints differ from their own	1	2	3	4	5
Asked students to help each other understand ideas or concepts	1	2	3	4	5
Gave projects, tests, or assignments that required original or creative thinking	1	2	3	4	5
Encouraged student-faculty interaction outside of class (e.g., office visits, phone calls, email)	1	2	3	4	5

Progress On:

Thirteen possible learning objectives are listed, not all of which will be relevant in this class. Describe the amount of progress you made on each (even those not emphasized in this class) by using the following scale:

- No Apparent Progress
- Slight Progress; I made small gains on this objective
- Moderate Progress: I made some gains on this objective
- Substantial Progress; I made large gains on this objective
- Exceptional Progress; I made outstanding gains on this objective

Describe your progress on:

	No Apparent Progress	Slight Progress	Moderate Progress	Substantial Progress	Exceptional Progress
Gaining a basic understanding of the subject (e.g., factual knowledge, methods, principles, generalizations, theories)	1	2	3	4	5
Developing knowledge and understanding of diverse	1	2	3	4	5

perspectives, global awareness, or other cultures					
Learning to *apply* course material (to improve thinking, problem solving, and decisions)	1	2	3	4	5
Developing specific skills, competencies, and points of view needed by professionals in the field most closely related to this course	1	2	3	4	5
Acquiring skills in working with others as a member of a team	1	2	3	4	5
Developing creative capacities (inventing; designing; writing; performing in art, music, drama etc.)	1	2	3	4	5
Gaining a broader understanding and appreciation of intellectual/cultural activity (music, science, literature, etc.)	1	2	3	4	5
Developing skill in expressing myself orally or in writing	1	2	3	4	5
Learning how to find, evaluate, and use resources to explore a topic in depth	1	2	3	4	5
Develop ethical reasoning and/or ethical decision making	1	2	3	4	5
Learning to analyze and critically evaluate ideas, arguments, and points of view	1	2	3	4	5
Learning to apply knowledge and skills to benefit others or serve the public good	1	2	3	4	5
Learning appropriate methods for collecting,	1	2	3	4	5

analyzing, and interpreting numerical information					

On the next two items, compare this course with others you have taken.

The course:

	Much less than Most Courses	Less than Most Courses	About Average	More than Most Courses	Much More than Most Courses
Amount of coursework	1	2	3	4	5
Difficulty of subject matter	1	2	3	4	5

For the following items, choose the option that best corresponds to your judgement.

	No Apparent Progress	Slight Progress	Moderate Progress	Substantial Progress	Exceptional Progress
As a rule, I put forth more effort than other students on academic work.	1	2	3	4	5
I really wanted to take this course regardless of who taught it.	1	2	3	4	5
When this course began I believed I could master its content.	1	2	3	4	5
My background prepared me well for this course's requirements.	1	2	3	4	5
Overall, I rate this instructor an excellent teacher.	1	2	3	4	5
Overall, I rate this course as excellent.	1	2	3	4	5

Comments

Appendix H

NILD Educational Therapy® Reading Techniques

Table H1

NILD Educational Therapy® Reading Techniques

Technique	Description
Blue Book	Provides explicit and systematic phonics instruction using key words that represent the sound-symbol associations for English Language Phonemes. Metacognitive strategies are used to recite, memorize, and apply phonemic knowledge and identify orthographic patterns. Dictation activities are used to develop encoding skills, and fluency exercises are used for decoding skills.
Buzzer	Words are constructed a letter at a time using the Morse Code. Students identify orthographic patterns that represent specific phonemes.
	Students identify word meanings, parts of speech, morphemes, synonyms, and antonyms. Original sentences are created that reflect understanding of the word meaning and correct grammatical usage.
Dictation and Copy	Utilizes paragraphs from any source that is determined to be at the student's instructional reading level. Two sentences are dictated individually, written and checked for word order and correct spelling. Questions that refer to learned spelling rules from the Blue Book are used to correct decoding and spelling errors. The remainder of the paragraph is copied, and a summary sentence is created or the main idea identified. Students may also summarize the paragraph using a graphic organizer.
Let's Read	Linguistic readers are used to practice decoding orthographic patterns in simple words or sentences. Repeated reading of words, sentences, and passages is used to promote fluency.
Moveable Alphabet	Individual letters (e.g., foam letters or letter tiles) are used to provide practice in phonemic awareness and phonological awareness using the various orthographic representations of specific phonemes. The letters are also used to practice decoding syllables by providing discovery learning through active exploration and discovery learning.

Adapted from "Level I Participant Course Manual (4th ed.)," by National Institute for Learning Development, 2017, pp. 3-50. Copyright by the National Institute for Learning Development.

Appendix I

Summary Matrix

Table I1

Summary Matrix: Research Questions, Measures, Data Collection Timeline, and Data Analysis

Research Questions	Measures	Data Collection Timeline	Data Analysis
1. To what extent does participation in the RETC increase an ET's knowledge of mindset information?	1. Mindset Knowledge Inventory 2. Course Artifacts	1. July 2018 and August 2018 2. August 2018	1. Measure of central tendency Wilcoxon Signed Rank Test Pearson's r correlation ANOVA 2. Inductive thematic coding
2. To what extent does participation in the RETC increase an ET's self-efficacy for implementing growth mindset instructional practices?	1. Teachers' Sense of Efficacy Scale (Tschannen-Moran & Woolfolk-Hoy, 2001)	1. July 2018 and August 2018	1. Measure of central tendency Wilcoxon Signed Rank Test Pearson's r correlation ANOVA
3. To what extent does participation in the RETC increase an ET's use of growth mindset instructional practices?	1. Reformed Teaching Observation Protocol (Sawada et al., 2002)	1. August 2018	1. Measure of central tendency Paired *t*-tests Pearson r correlation ANOVA
4. What components of the RETC do ETs describe as useful or not useful in facilitating their self-efficacy beliefs to implement growth mindset instructional practices?	1. Interview Transcripts	1. August 2018	1. Inductive thematic coding A priori coding
5. What variations in implementation, if any, occur that are likely to affect RETC's outcomes?	1. IDEA Student Ratings of Instruction Diagnostic Feedback 2016 Instrument (Li et al., 2016) 2. Activity Logs	August 2018	1. Measure of central tendency Inductive thematic coding A priori coding 2. Measure of central tendency

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Major: Speech-language pathology, Summa cum Laude
Master's Thesis: Parental Perceptions of Cochlear Implants for their Hearing-Impaired Child

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Professional Experience

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Teaching Assistant: Doctoral Level Online Class: Research Methods and Systematic Inquiry II

National Institute for Learning Development (NILD), Suffolk, VA 2014 – present
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Executive Director 2002-2014

Park Place School, Norfolk, VA 2001-2002
Educational Therapist and Classroom Teacher (Grades 3-5): Language Arts

Children's Hospital of the King's Daughter's, Norfolk, VA 1999-2001
Speech-Language Pathologist: In-Patient Clinician

Invited Presentations (Selected)

Alpha to Omega conference Keynote Speaker, India & Singapore 2014

Association of Educational Therapists, Presenter, Pennsylvania 2015

International Educational Conference, Keynote Speaker, Hungary & Romania 2016

Membership and Licenses

American Speech-Language Hearing Association (ASHA)	1999 - present
International Dyslexia Association (IDA)	2012 - present
Association of Educational Therapists (AET)	2010 - present
Certificate of Clinical Competency (ASHA National Board Certification)	2000 - present
Board of Audiology and Speech-Language Pathology Virginia Department of Health Professions State License	1999 - present
Professionally Certified Educational Therapist (NILD)	2003 - present
Certified Dyslexia Therapist (IDA)	2016 - present
Certified Educational Therapists/Professional (AET)	2010 - present